



REPUBLIC OF TÜRKİYE

Convention on Nuclear Safety

Turkish National Report for the 10th Review Meeting

September 2025



NUCLEAR REGULATORY AUTHORITY

REPUBLIC OF TÜRKİYE



**Turkish National Report
on Compliance with the Obligations of the
Convention on Nuclear Safety**

September 2025



NUCLEAR REGULATORY AUTHORITY

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LIST OF ABBREVIATIONS

AEC	Atomic Energy Commission
AFAD	Disaster and Emergency Management Authority
Akkuyu Nuclear JSC	Akkuyu Nuclear Power Plant Electricity Generation Joint-Stock Company
ALARA	As Low As Reasonably Achievable
BDBA	Beyond Design Basis Accident
CBRN	Chemical, Biological, Radiological or Nuclear
CNS	Convention on Nuclear Safety
ÇŞİDB	Ministry of Environment, Urbanisation and Climate Change
DiD	Defence in Depth
EAL	Emergency Action Levels
EARMS	Environmental Automated Radiological Monitoring System
EC	European Commission
EIA	Environmental Impact Assessment
ENSREG	European Nuclear Safety Regulators Group
EPDK	Energy Market Regulatory Authority
EOP	Emergency Operating Procedures
SAMG	Severe Accident Management Guidelines
ETKB	Ministry of Energy and Natural Resources
EU	European Union
EÜAŞ	Electricity Generation Corporation
EÜAŞ ICC	EÜAŞ International Incorporated Cell Company
IAEA	International Atomic Energy Agency
IGA	Intergovernmental Agreement
IKAS	Integrated Warning and Alarm System
IRRS	Integrated Regulatory Review Service
INSC	Instrument for Nuclear Safety Cooperation
IOC	Independent Oversight Company
IPA	Pre-accession Assistance
ISO	International Organization for Standardization
MEB	Ministry of National Education
NDK	Nuclear Regulatory Authority

NDRP	National Disaster Response Plan
NEIPGM	General Directorate of Nuclear Energy and International Projects
NPP	Nuclear Power Plant
NREP	National Radiation Emergency Plan
NÜTED	NÜTED Nuclear Technical Support Joint Stock Company
Paris Convention	Convention on Third Party Liability in the Field of Nuclear Energy
PSA	Probabilistic Safety Assessment
PSAR	Preliminary Safety Analysis Report
PSR	Periodic Safety Review
QAP	Quality Assurance Program
RADİSA	Radiation Monitoring and Warning System
RDL	Regulatory Documents List
SAR	Safety Analysis Report
SPR	Site Parameters Report
SSC	Structures, Systems and Components
TAEK	Turkish Atomic Energy Authority
TENMAK	Turkish Energy, Nuclear and Mineral Research Agency
TSE	Turkish Standards Institution
TSO	Technical Support Organization
TÜNAŞ	Türkiye Nuclear Energy Company
USR	Updated Site Report
VDNS	Vienna Declaration on Nuclear Safety
VVER	Water-Water Energetic Reactor

INTRODUCTION

Türkiye signed the Convention on Nuclear Safety (CNS) on 20 September 1994, shortly after its adoption on 17 June 1994 in the Vienna Diplomatic Conference. Following the ratification of the CNS by the Turkish Parliament, Türkiye officially became a contracting party to the CNS on 24 October 1996. Since then, Türkiye has consistently fulfilled its obligations under the Convention, including the timely submission of National Reports pursuant to Article 5, which mandates regular review of the implementation of the CNS provisions. This report represents Turkish National Report prepared for the 10th Review Meeting to be held in April 2026 and describes the legislative, regulatory, and administrative measures, along with additional initiatives, undertaken by Türkiye to fulfil its commitments as a contracting party to the CNS.

Türkiye has actively and constructively participated in all previous Review Meetings of the CNS, both by presenting its own national progress and by engaging in the peer review of other Contracting Parties' reports. Türkiye remains firmly committed to maintaining this positive and proactive approach in the upcoming CNS Review Meetings.

Türkiye's plans for three nuclear power plant (NPP) projects include the ongoing construction of the Akkuyu NPP Project, a granted site approval for Sinop NPP Project,

and ongoing site characterization studies for the Kızılköy site. The Akkuyu NPP project, Türkiye's first step into nuclear power generation, consists of four units of VVER-1200 (Water-Water Energetic Reactor) reactors. The first unit of Akkuyu NPP was granted a commissioning permit in November 2023 and construction of the other three units is still ongoing. Another ongoing nuclear power project is the Sinop NPP, which received site approval in April 2024. The 10th National Report of Türkiye has been developed in full compliance with the requirements of the Guidelines Regarding National Reports under the Convention on Nuclear Safety (INFCIRC/572/Rev.8) and by using "Template to support the drafting of National Reports, International Atomic Energy Agency (IAEA)".

This report provides a comprehensive overview of Türkiye's nuclear safety framework. Special emphasis is placed on chapters addressing nuclear infrastructure development and licencing processes to inform contracting parties of the CNS.

Furthermore, the report contains an overview in the "Summary" section facilitating discussion on the actions taken to reflect the principles in the Vienna Declaration on Nuclear Safety (VDNS) for the implementation of the objective of the CNS to prevent accidents and mitigate radiological consequences.

SUMMARY

CURRENT SITUATION

In response to the growing demand for electricity and the objective of diversifying its energy mix, Türkiye has significantly advanced its nuclear power programme over the past decade. Türkiye's nuclear strategy currently envisages the development of three NPP projects: the Akkuyu NPP, which is under construction; the Sinop NPP, which has granted site approval; and the Kızılköy NPP, for which site characterization studies are underway.

The Akkuyu NPP, comprising four VVER units each with a capacity of 1200 MWe, is currently under active construction. The project is being implemented under a unique Build-Own-Operate model pursuant to an intergovernmental agreement (IGA), the "Agreement between the Government of the Russian Federation and the Government of the Republic of Türkiye on cooperation in relation to the construction and operation of an NPP at the Akkuyu site in the Republic of Türkiye" (Akkuyu Project Agreement), signed with the Russian Federation on 12 May 2010, representing a first-of-its-kind arrangement globally. In accordance with the Akkuyu Project Agreement, the Russian Federation has undertaken responsibilities not only to provide the necessary financing and technology, but also to ensure electricity generation and to guarantee the continuous supply of nuclear fuel throughout the operational lifetime of the NPP.

Akkuyu Nuclear Power Plant Electricity Generation Joint-Stock Company (Akkuyu Nuclear JSC), established in accordance with the Akkuyu Project Agreement in December 2010, is the license holder and responsible operator of the Akkuyu NPP under Turkish jurisdiction. Unit 1 of Akkuyu NPP received the construction license on 2 April 2018, followed by the issuance of the commissioning permit in November 2023, marking a critical step toward operational readiness. Unit 2 was granted its construction license on 26 August

2019, Unit 3 on 13 November 2020, and Unit 4 on 28 October 2021. The fresh nuclear fuel for Unit 1 was brought to site on April 2023. Unit 1 was granted commissioning permit on November 2023 which allows commissioning activities prior to fuel loading. On 27 December 2024, Akkuyu Nuclear JSC applied for the operating license of Akkuyu NPP Unit 1. The application is in the application appropriateness control phase since there exists insufficiencies in the application documents. On 8 May 2025, Akkuyu Nuclear JSC applied for the commissioning permit regarding Unit 2. The application appropriateness control has been completed and the process of review and assessment of the application documents has started.

In parallel, Türkiye continues its commitment to expanding its nuclear energy capabilities through the Sinop NPP Project, located on the Black Sea coast. Although initial collaboration was established with Japan through the Sinop Project Agreement signed in 2013, the Turkish Government decided not to proceed after the feasibility studies.

During the reporting period, a major institutional restructuring took place in the Sinop NPP Project. The Electricity Generation Corporation (EÜAŞ), which had been recognized as the project owner since 2012, officially withdrew from this role in January 2023 with the approval of the Nuclear Regulatory Authority (NDK). Subsequent to the transfer of project ownership to the Türkiye Nuclear Energy Company (TÜNAŞ) in January 2023, the company finalized and submitted the Sinop Site Report for regulatory review. Following the comprehensive evaluation, Nuclear Regulatory Board officially granted site approval for the Sinop NPP site on 3 April 2024. The next phase involves obtaining the site preparation permit while discussions with

potential vendors for the Sinop NPP are actively ongoing.

The Kıyıköy site in Kırklareli Province was identified as the location for Türkiye's third planned NPP. In April 2024, TÜNAŞ formally notified the NDK of its intent to develop the project. Following its review, the NDK formally registered TÜNAŞ as the responsible organization. The Nuclear Regulatory Board approved the regulatory documents list (RDL) for the Kıyıköy NPP in September 2024, and site characterization studies commenced shortly thereafter. These activities are being conducted in accordance with Turkish legislation and IAEA safety requirements while negotiations with potential vendor countries for the construction continue.

CHANGES SINCE THE JOINT 8TH AND 9TH REVIEW MEETING OF CONVENTION ON NUCLEAR SAFETY

Since the last Review Meeting of CNS in March 2023, Türkiye has made significant progress in updating its nuclear regulatory infrastructure and advancing its nuclear energy programme. This section of the Summary outlines key developments and achievements that have taken place since March 2023.

The following regulations have been enacted since the last Review Meeting:

- Regulation on Authorization for Nuclear Facilities (2023),
- Regulation on Fire Safety in Nuclear Facilities (2023),
- Regulation on Management of the Radiation Emergencies (2023),
- Regulation on Inspections and On-site Examinations Regarding Nuclear Energy and Ionizing Radiation (2023),
- Regulation on Clearance and Release of Radioactive Materials (2023),
- Regulation on Liability Insurance and Guarantee Regarding Nuclear Risks (2023),

- Regulation on Radioactive Waste and Spent Fuel Management (2023),
- Regulation on Recording, Notification and Reporting in Nuclear Installations (2024),
- Regulation on Security of Nuclear Facilities and Nuclear Materials (2024),
- Regulation on the Supply Chain in Nuclear Facilities (2024),
- Regulation on Independent Oversight Activities in Nuclear Facilities (2024),
- Regulation on On-Site Direct Current Power Sources in Nuclear Power Plants (2025).

Alongside these newly issued regulations, the NDK has also expanded its international cooperation framework. In addition to previously signed Memoranda of Understanding with Belarus, the Czech Republic, Bulgaria, the Slovak Republic, the United States, Finland, Hungary, and the Russian Federation, on 26 September 2023, the NDK signed a Memorandum of Understanding with the Republic of Korea (Nuclear Safety and Security Commission) on Cooperation and Exchange of Information in the Field of Nuclear Safety and Radiation Protection.

In terms of international agreements in the field of nuclear safety, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management entered into force in Türkiye on 21 May 2023. After the ratification of the Joint Convention and officially becoming a Contracting Party, Türkiye presented its first national report in August 2024.

In line with the needs of the NDK, a variety of international cooperation mechanisms have been utilized, including the IAEA Technical Cooperation Programme and the European Commission (EC) Instrument for Nuclear Safety Cooperation (INSC). Under the Technical Cooperation Programme, activities for the 2020–2023 cycle have been completed,

and the project titled “Enhancing the Sustainability of Safety Culture for the Nuclear Regulatory Authority (TUR9025)”, covering the 2024–2025 cycle, is progressing towards completion. The project titled “Improving Effectiveness of Regulatory Control Activities of the Nuclear Regulatory Authority”, covering the 2026–2027 period, has completed its design and planning phase, with implementation scheduled to commence in March 2026. Within the framework of the INSC, the project titled “Further Strengthening of the Nuclear Safety and Radiation Protection Regulator in Türkiye” aims to strengthen the regulatory effectiveness of the NDK and achieve a nuclear safety culture comparable to that of European Union (EU) countries. The kick-off meeting was held on 1 November 2023, and the project, covering the period from 2023 to 2026, consists of 7 tasks and 15 sub-tasks. These initiatives further enhance Türkiye’s regulatory infrastructure and ensure continued alignment of its nuclear safety framework with international standards and best practices.

As part of its commitment to strengthening its nuclear safety framework and ensuring alignment with international best practices, Türkiye actively engages in IAEA peer reviews. The Integrated Regulatory Review Service (IRRS) Mission to Türkiye was conducted at the NDK Headquarters in Ankara from 4 to 16 September 2022. In line with its commitment to continuous improvement of nuclear infrastructure, NDK is planning to host a follow-up IRRS Mission in 2027.

In addition, as part of the operating licence application for Akkuyu NPP Unit 1, Akkuyu Nuclear JSC has submitted to NDK the Emergency Operating Procedures (EOP), Severe Accident Management Guidelines (SAMG), and the Probabilistic Safety Assessment (PSA) documents. In this regard, NDK plans to conduct two separate Technical Safety Review, TSR Missions, in 2026—one on EOP and SAMG documents and the other on Level 2 PSA and Seismic PSA documents.

Preparations are underway by Akkuyu Nuclear JSC for the implementation of the Pre-Operational Safety Review Team, Pre-Operational OSART Mission, for the assessment of the operational safety status of Akkuyu NPP Unit 1. The Pre-Operational OSART mission is planned to be conducted in December 2025.

The Emergency Preparedness Review Service, EPREV Mission, has been requested and a protocol was signed between Disaster and Emergency Management Authority (AFAD) and NDK in March 2022 since the EPREV Mission will be implemented in coordination with AFAD. Negotiations are currently underway to determine the mission date.

Following the Fukushima Daiichi accident, Türkiye joined EU’s Stress Tests by signing the Joint Declaration on comprehensive risk and safety assessments of nuclear plants. As an outcome of the Joint Declaration, the former regulatory body, Turkish Atomic Energy Authority (TAEK) requested applicable Stress Test evaluations for the Akkuyu NPP Project from the Akkuyu Nuclear JSC. The company prepared the applicable stress test evaluations for the Akkuyu NPP Project and submitted to TAEK. The first version of The Stress Tests National Report of Türkiye which also included the regulatory body’s assessments, was prepared in 2012, and the revised report was submitted to the EC in 2018.

In mid-2021, discussions began with the European Nuclear Safety Regulators Group (ENSREG) to organise a peer review of the Akkuyu NPP stress tests. The first stage of the review was held at NDK Headquarters in Ankara on 16–18 May 2022. The second stage took place at the Akkuyu NPP site on 27–31 May 2024. Following these visits, ENSREG prepared the Stress Tests Türkiye Expert Assessment Report, dated 13 November 2024. The peer review report and the press release were published on the ENSREG and NDK websites on 20 March 2025.

ACTIONS TAKEN TO REFLECT THE PRINCIPLES IN THE VIENNA DECLARATION ON NUCLEAR SAFETY

This subsection contains summary discussion on the actions taken to reflect the principles in the VDNS for the implementation of the objective of the CNS to prevent accidents and mitigate radiological consequences.

VDNS PRINCIPLE 1

VDNS Principle 1 states that “New NPPs are to be designed, sited, and constructed, consistent with the objective of preventing accidents in the commissioning and operation and, should an accident occur, mitigating possible releases of radionuclides causing long-term off-site contamination and avoiding early radioactive releases or radioactive releases large enough to require long-term protective measures and actions.”.

Issues of this principle were addressed during the approval of site related design parameters of Akkuyu and review and assessment of Preliminary Safety Analysis Report (PSAR) for limited work permit and construction license for the Unit 1, 2, 3 and 4 of Akkuyu NPP. Further details were given in sections 3, 13, 14 and 15.

VDNS PRINCIPLE 2

VDNS Principle 2 states that “Comprehensive and systematic safety assessments are to be

carried out periodically and regularly for existing installations throughout their lifetime in order to identify safety improvements that are oriented to meet the above objective. Reasonably practicable or achievable safety improvements are to be implemented in a timely manner.”.

Although this principle addresses the existing reactors, it was considered in review and assessment of Safety Analysis Report (SAR) for construction license of Unit 1, 2, 3 and 4 of Akkuyu NPP. Some safety improvements are under further investigations of Akkuyu Nuclear JSC and NDK. Further information could be found in sections 3 and 15 of this report.

VDNS PRINCIPLE 3

VDNS Principle 3 states that “National requirements and regulations for addressing this objective throughout the lifetime of NPPs are to take into account the relevant IAEA Safety Standards and, as appropriate, other good practices as identified inter alia in the Review Meetings of the CNS.”.

The new legislative framework is established, the regulatory framework needs an upgrading to comply with the legislations. This opportunity has been utilized by NDK as upgrading safety regulations to ensure full compliance with IAEA safety requirements and to be in line with the VDNS principles. Further information could be found in section 4 of this report.

Each Contracting Party shall take the appropriate steps to ensure that the safety of nuclear installations existing at the time the Convention enters into force for that Contracting Party is reviewed as soon as possible. When necessary in the context of this Convention, the Contracting Party shall ensure that all reasonably practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation. If such upgrading cannot be achieved, plans should be implemented to shut down the nuclear installation as soon as practically possible. The timing of the shut-down may take into account the whole energy context and possible alternatives as well as the social, environmental and economic impact.

Negotiations to build an NPP at the Akkuyu site in Türkiye has been started with the Russian Federation in February 2010 and concluded on 12 May 2010 with the Akkuyu Project Agreement

According to the Akkuyu Project Agreement, a Project Company named Akkuyu Nuclear JSC was incorporated to implement the Akkuyu NPP Project under the Turkish jurisdiction on 13 December 2010. The Akkuyu Nuclear JSC is responsible for the construction and operation of four VVER reactors with a total capacity of 4800 MWe. The former nuclear regulatory body of Türkiye, TAEK, recognized Akkuyu Nuclear JSC as the “Owner” of the Akkuyu NPP Project on 28 February 2011.

The Akkuyu Site on the Mediterranean coast was granted a site license for building an NPP in 1976 and this site was allocated to Akkuyu Nuclear JSC in 2011 as specified in the Akkuyu Project Agreement. Akkuyu Nuclear JSC finished the site investigations in Akkuyu for updating the site characteristics and parameters according to the Decree on Licensing of Nuclear Installations (1983) and other related legislation. Updated information on the characteristics of the site was included in the Updated Site Report (USR) and the report was approved by TAEK in March 2015. Upon completion of updating the information on the characteristics and parameters of the site, the Site Parameters Report (SPR) was submitted to TAEK for approval of site related design parameters in December 2015. The SPR also includes the results of detailed site investigations performed at the NPP site and the

precise values of the project parameters. On 9 February 2017, the project parameters were approved by TAEK.

On 2 March 2017, Akkuyu Nuclear JSC applied for the construction license of Unit 1. As the result of review and assessment of the application, the limited work permit was given to Akkuyu Nuclear JSC for Akkuyu NPP Unit 1 at the 146th meeting of Atomic Energy Commission (AEC) on 19 October 2017.

With the limited work permit, Akkuyu Nuclear JSC was allowed to start the construction of non-nuclear buildings, preparing the structural foundations of buildings and facilities related to nuclear and environmental safety, as well as the construction or manufacturing of structures, systems and components (SSCs) not related to nuclear and environmental safety.

On 2 April 2018, the construction license was granted for the Akkuyu NPP Unit 1 based on the application of the Akkuyu Nuclear JSC by the decision number 148/2 of the AEC on 30 March 2018, in accordance with the Law on TAEK and related regulations.

According to the former Decree on Licensing of Nuclear Installations (1983), operation and construction licenses for nuclear facilities could be issued based on general and specific conditions. Accordingly, general and specific conditions form an integral part of the construction license for Akkuyu NPP Unit 1. The license conditions are mainly related to the detailed design of the plant issues to be finalized until the operating license phase.

Table 1. Licences and Permits Granted for the Akkuyu NPP Project by September 2025

LICENCE/PERMIT	DATE	PURPOSE
Site Licence	1976	Suitability of the site to host an NPP
Approval of Updated Site Report	2013	Updating site studies based on developments after the site license issued in 1976 including changes in the site environment, changes in the regulatory requirements, the proposed NPP project and the lessons learned from the Fukushima Daiichi accident
Approval of Environmental Impact Assessment report	2014	To ensure environmental safety
Approval of Site Parameters	2017	Approval of the site parameters to be used in the design of NPP
Limited Work Permit for Unit 1	2017	Commencement of manufacturing and non-safety related construction.
Construction License for Unit 1	2018	Commencement of nuclear safety related construction and installation of systems and equipment
Limited Work Permit for Unit 2	2018	Commencement of manufacturing and non-safety related construction.
Construction License for Unit 2	2019	Commencement of nuclear safety related construction and installation of systems and equipment
Limited Work Permit for Unit 3	2020	Commencement of manufacturing and non-safety related construction
Construction License for Unit 3	2020	Commencement of nuclear safety related construction and installation of systems and equipment
Limited Work Permit for Unit 4	2021	Commencement of manufacturing and non-safety related construction
Construction License for Unit 4	2021	Commencement of nuclear safety related construction and installation of systems and equipment
Commissioning Permit for Unit 1	2023	Authorization to perform all commissioning tests required prior to loading nuclear fuel
Modification Permit	2023	Changes in the Akkuyu NPP design to justify compliance with the single failure principle in the power unit cold shutdown state
Modification Permit	2025	Changes in the Akkuyu NPP design to justify compliance with the single failure principle in regard of power plant electrical equipment

On 22 June 2018, Akkuyu Nuclear JSC applied for the construction license of Akkuyu NPP Unit 2 and the limited work permit was granted at the 149th meeting of AEC on 30 November 2018. The construction license was granted by the decision number 2019-44/1-1 of Nuclear Regulatory Board on 26 August 2019, in accordance with the Decree-Law on Organization and Duties of Nuclear Regulatory Authority and Amendments to Various Laws No. 702 (Decree-Law No. 702) and related regulations.

On 28 March 2019, Akkuyu Nuclear JSC applied for the construction license of Akkuyu NPP Unit 3 and the limited work permit was granted on 23 July 2020. The construction license was granted by the decision number 2020-71/2-1 of Nuclear Regulatory Board on 13 November 2020, in accordance with the Decree-Law No. 702 and related regulations.

On 12 May 2020, Akkuyu Nuclear JSC applied for the construction license of Akkuyu NPP Unit 4 and the limited work permit was granted on 30 June 2021. The construction license was granted by the decision number 2021-51/3-1 of Nuclear Regulatory Board on 28 October 2021, in accordance with the Decree-Law No. 702 and related regulations. Licenses and permits granted for the Akkuyu NPP Project by September 2025 are listed in Table 1.

Following the annulment of Decree-Law No. 702 by the Constitutional Court, Nuclear Regulatory Law No. 7381 (Law No. 7381) was entered into force on 8 March 2022.

On 17 March 2023, the Decree on Licensing of Nuclear Installations was revoked and Regulation on Authorizations Regarding Nuclear Facilities was published.

On 17 March 2023, Akkuyu Nuclear JSC applied for the commissioning permit of Akkuyu NPP Unit 1. Following the review and assessment of the application documents submitted by letters dated 17 March and 24 August 2023, the commissioning permit was granted on 21 November 2023 by decision of

the Nuclear Regulatory Board, in accordance with Law No. 7381 and the relevant legislation.

By September 2025, four modification permits had been granted by the NDK for the Akkuyu NPP design. Two of these modifications are directly related to the improvement of nuclear safety. The first one concerns compliance with the single-failure principle in the power unit cold shutdown state where modifications in the safety systems are made. The second one involves modifications in the electrical systems for compliance with the single-failure criterion. The remaining two modifications are related to the water intake and outlet structures of the NPP. All modifications are applicable to all four units.

On 7 October 2022, Akkuyu Nuclear JSC applied for the modification permit for design modifications in the Akkuyu NPP configuration to address license-specific conditions established within the licensing framework. These conditions pertain to the demonstration of conformity with the single failure criterion, a fundamental design principle mandated by the licensing regulations derived from Turkish and Russian nuclear legislation as well as the relevant standards of the IAEA. In response, Akkuyu Nuclear JSC submitted the technical report on “Description of modifications to be incorporated in the Akkuyu NPP design to justify compliance with the single failure principle in the power unit cold shutdown state” to NDK to demonstrate the fulfilment of these conditions. The modification permit was granted by the decision number 2023-68/3 of the Nuclear Regulatory Board on 24 August 2023, in accordance with the Law No. 7381 and related regulations.

On 7 June 2024, the technical report prepared by Atomenergoproekt JSC Moscow branch titled “Description of the Changes to be Incorporated in the Akkuyu NPP Design to Justify Compliance with the Single Failure Principle in Regard of Power Plant Electrical Equipment” was submitted to the NDK. The

modification permit was granted by the Nuclear Regulatory Board on 28 August 2025 in accordance with the Law No. 7381 and related regulations.

On 27 December 2024, Akkuyu Nuclear JSC applied for the operating license of Akkuyu NPP Unit 1. However, the NDK found the application insufficient due to missing information and requested Akkuyu Nuclear JSC to complete the documentation with the necessary details in order to initiate the review and assessment process.

On 8 May 2025 Akkuyu Nuclear JSC applied for the commissioning permit of Akkuyu NPP Unit 2. The application appropriateness control was completed, and the review and assessment of the application documents have begun.

During the review and assessment of the site reports and submissions for the construction license, special attention was given to lessons learned from the Fukushima Daiichi accident and the VDNS principles. While certain measures have already been taken -such as being very conservative in estimating the potential tsunami wave height at the site, increasing the capacity of hydro accumulators from 24 to 72 hours, adding mobile diesel generators in case of exceeding 72 hours design extension conditions or severe accidents, and including a core catcher in the design- some further issues are still under investigation to ensure full compliance with the VDNS principles.

The Sinop NPP is the second NPP project planned in Türkiye. In this context, the

Agreement between the Government of the Republic of Türkiye and the Government of Japan on Cooperation for the Development of Nuclear Power Plants and the Nuclear Power Industry in the Republic of Türkiye was signed on 3 May 2013, with the aim of constructing and operating an NPP. However, based on the results of the feasibility study prepared by the Japanese-led consortium, the Turkish Government evaluated the project and ultimately decided not to proceed with Japan. As a result, the planned cooperation for the Sinop NPP project was discontinued.

Instead, TÜNAŞ, which applied to build an NPP at the Sinop Site, was granted the “Owner” status on 27 January 2023.

On 30 May 2023, TÜNAŞ applied for the site approval for the site located in the Sinop province on the Black Sea coast of Türkiye. The site approval was granted with the decision of the Nuclear Regulatory Board dated 3 April 2024 in accordance with the Law No. 7381 and related legislation.

The Kızılköy NPP has been designated as the third nuclear power plant to be constructed at the site located in Kırklareli province on the Black Sea coast of Türkiye. TÜNAŞ, which made a notification of intent to build an NPP at the Kızılköy site on 5 April 2024 was registered as the owner/operator. The RDL to be taken as basis in the authorization activities of the Kızılköy NPP was determined by the decision of the Nuclear Regulatory Board on 26 September 2024.

7 LEGISLATIVE AND REGULATORY FRAMEWORK (ARTICLE 7)

1. *Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations.*
2. *The legislative and regulatory framework shall provide for:*
 - i. *the establishment of applicable national safety requirements and regulations;*
 - ii. *a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence;*
 - iii. *a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licences;*
 - iv. *the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.*

7.1 ESTABLISHING AND MAINTAINING A LEGISLATIVE AND REGULATORY FRAMEWORK

7.1.1 LEGISLATIVE FRAMEWORK

Türkiye has a civil law system based on codified laws. As indicated in Figure 1, the main domestic sources of law in hierarchical order are as follows: The Constitution, codes and statutes, international treaties, Presidential decrees, and regulations. Once the international treaties ratified by the Grand National Assembly of Türkiye, they have the same legal effect as codes and statutes.

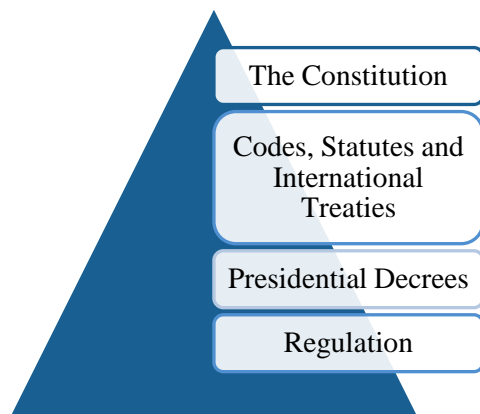


Figure 1 - Hierarchy of Norms in Türkiye

Türkiye established its first nuclear regulatory body, AEC, on 27 August 1956 with Law No. 6821 and pursued this effort to benefit from international experience in the area and become

one of the founding members of IAEA in 1957. The AEC was replaced by the TAEK in 1982 under Law No. 2690. In July 2018, with a referendum amending the constitution, parliamentary system of government in Türkiye was replaced with a presidential governmental system. Consequentially, all governmental institutions had been modified to adapt with the new system.

In order to improve the regulatory system in Türkiye and achieve full compliance with international requirements and expectations in the nuclear area, a draft Nuclear Energy Law was prepared by TAEK in coordination with Ministry of Energy and Natural Resources (ETKB). This draft law has been enacted with the Decree-Law No. 702 and with Presidential Decree on Organization of Institutions and Organizations Related, Affiliated and Associated with Ministries and Other Institutions and Organizations No. 4 (PD No. 4).

NDK was established by Decree-Law No. 702 which was a comprehensive nuclear law regulating nuclear safety, nuclear security, nuclear safeguards, radiation safety, radiation protection, and other related subjects on this topic.

Following the entry into force of the Decree-Law. 702, the Turkish Constitutional Court annulled the Decree-Law No. 702 on 9 March 2021 due to procedural reasons. The Turkish Constitutional Court defined one-year period for the date of effect of the decision allowing

the government to reregulate. During this period, Nuclear Regulatory Law No. 7381 was enacted to replace Decree-Law No. 702 and entered into force on 8 March 2022.

Law No. 7381 contains provisions and requirements on general principles of radiation protection, safety, security, and safeguards; authorizations and inspections; administrative and criminal sanctions; coordination of activities between different governmental bodies regarding interfaces between them while regulating nuclear and radiation facilities and activities; roles and responsibilities of decommissioning and treating and handling of spent fuel and radioactive waste; establishment of independent nuclear regulatory body, NDK, and establishment of NÜTED Nuclear Technical Support Joint Stock Company (NÜTED).

In addition to Law No. 7381, Presidential Decree on the Organization and Duties of the Nuclear Regulatory Authority No. 95 (PD No. 95) entered into force on 8 March 2022 and it regulates the functions and organizational structure of the NDK. Therefore, the provisions regarding the NDK in PD No. 4 have been regulated by PD No. 95.

Former nuclear regulatory body, TAEK, was transformed to become a research and development organization and also given the responsibility of management of all national radioactive waste including the final disposal activities.

With PD No. 57, TENMAK was established. TAEK, National Boron Research Institute and Rare Earth Element Research Institute are gathered under the umbrella of TENMAK.

Other important legislation affecting the nuclear installations consists of the Environment Law No. 2872 which regulates environmental impact of nuclear facilities and

gives the regulatory responsibilities and authorities to the Ministry of Environment Urbanisation and Climate Change (ÇŞİDB) and the Electricity Market Law No. 6446 which regulates electricity production licenses and gives regulatory authority to the Energy Market Regulatory Authority (EPDK). Furthermore, the Law No. 5237, Turkish Criminal Code, defines some of nuclear and radiological related crimes and penalties. However, to ensure full compliance with the provisions of international instruments, certain crimes and administrative penalties are defined in Law No. 7381. There are several other regulatory bodies indirectly regulating NPPs for some other general issues such as Ministry of Transportation and Infrastructure, Ministry of Health, municipalities etc.

In the field of nuclear liability, Türkiye is a party to the Paris Convention on Third Party Liability in the Field of Nuclear Energy (The Paris Convention) of 29 July 1960. Its 1964, 1982 and 2004 additional protocols are ratified and currently in force in Türkiye. Provisions regarding nuclear liability, which are included in the fifth Section of Law No. 7381, are in full compliance with the Paris Convention.

Regarding spent fuel and radioactive waste management, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management officially entered into force on 21 May 2023 in Türkiye. Furthermore, the Regulation on Radioactive Waste Management Regulation on Radioactive Waste Management Special Account and Decommissioning Special Account and the Accounts Management Board entered in force on 14 February 2023 and the Regulation on Radioactive Waste and Spent Fuel Management entered into force on 7 November 2023.

Table 2. International Agreements Signed by Türkiye

AGREEMENT	SIGNED ON	ENTRY INTO FORCE
Convention on Early Notification of a Nuclear Accident	26.09.1986	03.02.1991
Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	26.09.1986	03.02.1991
Convention on Nuclear Safety	20.09.1994	24.10.1996
Convention on Physical Protection of Nuclear Materials	23.08.1983	08.02.1987
Amendment to the Convention on Physical Protection of Nuclear Materials	10.02.2015	08.05.2016
Convention on Third Party Liability in the Field of Nuclear Energy (the Paris Convention)	28.10.1960	01.04.1968
1964 Protocol to Amend the Paris Convention	28.01.1964	05.04.1968
1982 Protocol to Amend the Paris Convention	16.11.1982	07.10.1988
2004 Protocol to Amend the Paris Convention	12.02.2004	04.01.2022
Joint Protocol Relating to the Application of the Vienna and the Paris Conventions	21.09.1988	26.06.2007
Treaty on the Non-Proliferation of Nuclear Weapons	28.01.1969	17.04.1980
International Convention for the Suppression of Acts of Nuclear Terrorism	14.09.2005	24.09.2012
Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons	30.06.1981	01.09.1981
Protocol Additional to the Agreement between the Government of the Republic of Türkiye and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons	06.07.2000	17.07.2001
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	06.10.2021	21.05.2023

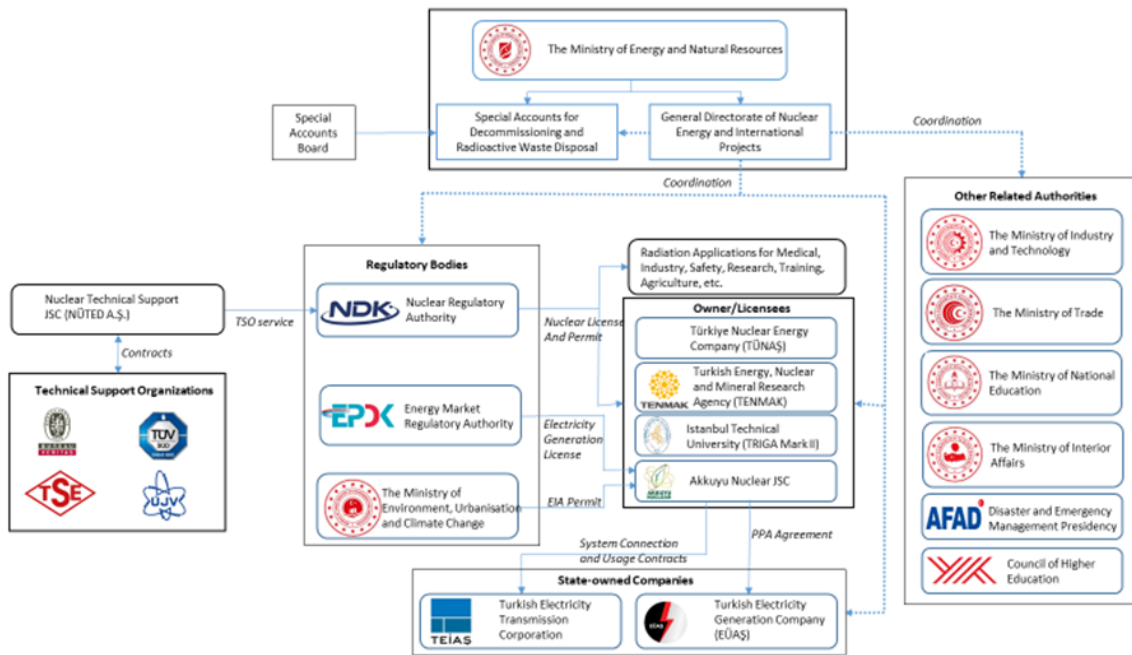


Figure 2 - Governmental and Organizational Infrastructure Taking Part in Turkish Nuclear Energy Program

7.1.2 RELATED GOVERNMENTAL BODIES WITH REGULATORY FUNCTIONS ON NUCLEAR ACTIVITIES

A number of organizations are directly or indirectly involved in the implementation of the nuclear power programme in Türkiye (Figure 2). The responsibilities of the Governmental bodies with regulatory functions are given in the following subchapters.

7.1.2.1 MINISTRY OF ENERGY AND NATURAL RESOURCES (ETKB)

The ETKB is the major competent authority in the national energy sector. It is responsible for the preparation and implementation of energy policies, plans and programs in co-ordination with its subsidiaries, related institutions and other public and private entities.

Presidential Decree on the Organization of Presidency of 10 July 2018, Presidential Decree No. 1 (PD No. 1) defines the organizational structure of ETKB. General Directorate of Nuclear Energy and International Projects (NEIPGM) is established by PD 37. NEIPGM

has the responsibility of coordination of activities between ministries, public institutions and organizations, universities, non-governmental organizations and private sector companies regarding NPP projects and related activities. Furthermore, informing the public regarding nuclear energy is also under the responsibility of NEIPGM.

TENMAK and EÜAŞ are related with ETKB whereas the regulatory bodies, NDK and EPDK, are associated with the ETKB. Under the Turkish legal system, Ministries have no administrative authority over associated organizations nor is there any hierarchical relationship. The association serves solely to ensure administrative integrity and facilitate coordination.

7.1.2.2 MINISTRY OF ENVIRONMENT, URBANISATION AND CLIMATE CHANGE (ÇŞİDB)

ÇŞİDB establishes principles of national policy, related plans and programs for protection and improvement of the environment, and the prevention of environmental pollution and struggling with

climate change. In concrete terms, the ÇŞİDB responsibilities include ensuring the most proper and effective use and protection of land, the protection and improvement of the natural plant and animal habitat and the prevention of environmental pollution. These responsibilities are being carried out by the ÇŞİDB in the frame of the Regulation on Environmental Impact Assessment (EIA) (2022). According to this Regulation, the owner of the project has to prepare an EIA Report at the planning stage which should be submitted to the ÇŞİDB. The ÇŞİDB evaluates the report for the feasibility and environmental aspects of the proposed installation, and grants permission to the owner to carry out its project if the report is found satisfactory. Nuclear installations fall into the category of facilities requiring authorization, as NPPs are included in Art. 2.b of the Annex-1 List of the Regulation on EIA (2022). NPPs should obtain an EIA positive decision from the ÇŞİDB as a prerequisite for any license. According to PD No. 95, ÇŞİDB defines the format of EIA report's chapter regarding radiological effects with the assent of the NDK. These chapters are reviewed and assessed by NDK.

Under the Regulation on Environmental Permits and Licenses (2014), enterprises subject to an environmental permit or an environmental permit and license are classified in Annex-1 and Annex-2 lists according to their environmental impacts. Enterprises listed in Annex-1 and Annex-2 are required to first obtain a Temporary Activity Certificate in order to commence operations. Enterprises holding a Temporary Activity Certificate must obtain an environmental permit or an environmental permit and license within one year from the date of issuance of the certificate. In this context, NPPs are included in Art. 1.4 of the Annex-1 List of the Regulation on Environmental Permits and Licenses (2014), and are therefore among the enterprises subject to an environmental permit or an environmental permit and license.

7.1.2.3 NUCLEAR REGULATORY AUTHORITY (NDK)

NDK is established as the independent nuclear regulatory body by Law No. 7381. NDK regulates all activities regarding to nuclear facilities, radiation facilities, radioactive waste facilities, nuclear materials, radiation sources, radioactive waste, export control with the aim of non-proliferation of nuclear weapons, radiation emergency management, qualification and training of personnel through issuing regulations and guides, reviewing and assessing the submitted documents, issuing authorizations, and conducting inspections and enforcements.

7.1.2.4 TURKISH ENERGY, NUCLEAR AND MINERAL RESEARCH AGENCY (TENMAK)

Although established as the nuclear regulatory body by the Law No. 2690 of 1982, TAEK has been stripped of its regulatory duties during the transition to new governmental system in July 2019 and transformed into a research and development organization in nuclear and radiation field.

TENMAK was established by the PD No. 57 and consists of a central organization headquartered in Ankara and many service units directly connected to the headquarters.

The institutes within TENMAK body are:

- Nuclear Energy Research Institute,
- Boron Research Institute,
- Rare Earth Elements Research Institute,
- Energy Research Institute,
- Clean Energy Research Institute.

TENMAK is given the lead role, authority and responsibility on research and development in science and technology related to energy, minerals, ionizing radiation, particle accelerators, nuclear, radioactive waste, boron and rare earth elements. TENMAK's responsibility on determining the strategies regarding radioactive waste and taking

necessary actions as the national radioactive waste management organization leads the establishments of a Radioactive Waste Management Department under TENMAK.

7.1.2.5 THE ENERGY MARKET REGULATORY AUTHORITY (EPDK)

EPDK is the independent regulatory body for Turkish energy markets. EPDK is responsible and entitled to grant and renew licenses defining the rights and liabilities of the legal persons pertaining to their authorized activities; prepare the existing contracts within the scope of the transfer of operational rights; establish performance standards by monitoring the market performances; prepare, improve and execute the secondary legislation, audit the licensees, prepare, modify and execute regulated tariffs and to ensure that the market activities are in compliance with the Electricity Market Law No. 6446. In this capacity EPDK grants the electricity production license to nuclear installations.

7.1.2.6 TÜRKİYE NUCLEAR ENERGY COMPANY (TÜNAŞ)

EÜAŞ is a state-owned company and the largest electricity generation company in Türkiye. The responsibility of EÜAŞ is to operate the existing hydraulic and thermal power plants under its jurisdiction, running the newly built hydraulic power plants maintenance, repair and rehabilitation of the power plants under operation.

In 2015, EÜAŞ International Incorporated Cell Company (EÜAŞ ICC) was established with 100% of its capital belonging to EÜAŞ. Following the establishment of EÜAŞ ICC, the execution of Sinop and 3rd NPP projects was undertaken by EÜAŞ ICC from 2017.

In 2022, TÜNAŞ, a subsidiary of EÜAŞ under the ETKB, was established through the transfer of all assets of EÜAŞ ICC, which was originally founded abroad in 2015.

The Owner status granted to EÜAŞ by the TAEK in 2012 for the Sinop NPP Project was terminated on 16 January 2023 by the approval of the NDK, following EÜAŞ's withdrawn application.

Simultaneously, TÜNAŞ applied to NDK for recognition as the Owner of the Sinop NPP, and on 27 January 2023 and was granted this status. On 30 May 2023, TÜNAŞ applied for the site approval for the Sinop NPP and the site approval was granted with the decision of the Nuclear Regulatory Board on 3 April 2024.

On 5 April 2024, TÜNAŞ notified its intent to construct the Kıyıköy NPP, Türkiye's third NPP, and was registered as the owner/operator.

7.2 NATIONAL SAFETY REQUIREMENTS AND REGULATIONS

The primary legislation governing nuclear energy and ionizing radiation in Türkiye, Law No. 7381, establishes provisions and requirements on the following:

- General principles of radiation protection, safety, security, and safeguards.
- Procedures for authorizations and inspections.
- Administrative and criminal sanctions.
- Coordination of activities between various governmental bodies, addressing interfaces in the regulation of nuclear and radiation facilities and activities.
- Roles and responsibilities related to decommissioning and the management of spent fuel and radioactive waste.
- Third-party liability for nuclear damage resulting from nuclear incidents.
- Establishment of an independent nuclear regulatory body, the NDK.
- Establishment of the NÜTED, which serves as the technical support organization for the NDK.

In addition to Law No. 7381, PD No. 95 regulates the functions and organizational structure of the NDK; defines the activities, topics and areas to be regulated by the NDK and the duties of its service units. Additionally, NDK issued Regulation on Working Procedures and Principles of Nuclear Regulatory Board (2022) that defines Nuclear Regulatory Board of NDK's working procedures and principles.

The current secondary regulations defining Turkish nuclear safety and security requirements are presented in Table 3. In addition to the regulations listed in the Table 3, decisions of the Nuclear Regulatory Board also establish detailed provisions on safety and security.

Even though many regulations have already been replaced, the legislative transition is still ongoing. A few older regulations remain in force until they are fully replaced by new ones developed in accordance with Law No. 7381.

According to Law No. 7381, nuclear facilities are defined as facilities established or operated for the extraction, production, processing, use, possession, reprocessing, or storage of nuclear material. The primary legislative instrument currently regulating the authorization process for nuclear facilities is the Regulation on Authorizations Regarding Nuclear Facilities which entered into force on 17 March 2023.

The Regulation on Authorizations Regarding Nuclear Facilities (2023) includes provisions for the authorization of nuclear power plants, research reactors, nuclear fuel fabrication and reprocessing facilities, and nuclear material processing facilities.

The regulation requires site approval for any nuclear facility by NDK before proceeding. The following activities also require authorization from NDK:

- Site preparation,
- Equipment manufacturing,
- Construction,
- Commissioning,
- Operation,
- Restarting operations,
- Modifications affecting safety and security at the facility,
- Decommissioning.

The regulation adopts a graded approach to authorization procedures and application requirements for different nuclear facilities.

The responsibilities of the License Holder are set out in detail in the Regulation on Authorizations Regarding Nuclear Facilities (2023) encompassing the site, construction, commissioning, operation, and decommissioning processes.

This Regulation also defines the main steps of licensing with required format and content of application documents for regulatory review.

Table 3. Secondary Legislation in The Field of Nuclear Safety

REGULATION	ISSUE DATE	SCOPE
Regulation on Safe Transport of Radioactive Material	2005	Defines measures for stages of loading, transportation, unloading, temporary storage as well as delivery to recipient of the packages containing radioactive materials including its design and preparation, for transportation by road, railways, air or sea.
Regulation on Specific Principles for Safety of Nuclear Power Plants	2008	Determines the safety principles to be complied to achieve the nuclear safety objectives defined by the Authority in site assessment, design, construction, commissioning, operation and decommissioning phases; as well as principles related with the emergency and accident management.
Regulation on Design Principles for Safety of Nuclear Power Plants	2008	Establishes safety principles to be followed during the design of NPPs to achieve nuclear safety objectives defined by the Authority.
Regulation on Nuclear Power Plant Sites	2009	Establishes the nuclear safety requirements for siting of NPPs.
Regulation on Protection of Outside Workers in Controlled Areas from the Risks of Ionizing Radiation	2011	Defines the requirements for radiation protection of outside workers performing nuclear and ionizing radiation activities in controlled areas
Regulation on Physical Protection in the Transport of Nuclear Materials	2012	Defines national aspects of physical protection in the transport of nuclear materials in compliance with INFCIRC 225/Rev.4 and some provisions of INFCIRC 225/Rev5.
Regulation on Radiation Protection in Nuclear Installations	2018	Defines rules and procedures for radiation protection in all phases during the lifetime of nuclear installations radiation facilities and radioactive waste facilities, radiation facilities and radioactive waste facilities.
Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities	2022	Defines the basic requirements for establishing, maintaining and continuously improving a management system that gives priority to safety, develops leadership skills at all levels of management and supports a strong safety culture in Organization that constructs, operates, decommissions or closes a nuclear installation.
Regulation on National Radiation Monitoring and Radiation Control	2022	Determines the principles, procedures, and responsibilities of individuals, institutions, and organizations regarding the conduct of national radiation monitoring and radiation control activities directed towards ionizing radiation.
Regulation on Organizational Structure and Personnel in Nuclear Facilities	2022	Defines the procedures and rules for operating organization, qualifications and training of operating personnel, and licenses of operating personnel in nuclear plants.

REGULATION	ISSUE DATE	SCOPE
Nuclear Regulatory Authority Administrative Sanctions Regulation	2023	Defines the administrative sanctions to be applied by the Nuclear Regulatory Authority and the procedures and principles regarding their implementation.
Regulation on Authorizations Regarding Nuclear Facilities	2023	Defines the procedures and principles regarding the authorization of activities in order to determine and confirm that the activities related to nuclear facilities are carried out within the framework of radiation protection, safety and security principles.
Regulation on Fire Safety in Nuclear Facilities	2023	Defines the basic principles and the duties and responsibilities of the organization regarding ensuring fire safety in nuclear facilities.
Regulation on Management of Radiation Emergencies	2023	Defines the procedures and principles regarding the management of radiation emergencies that may occur during the execution of activities subject to regulatory control regarding nuclear energy and ionizing radiation, and determines the duties and responsibilities of the authorized persons.
Regulation on Inspections and On-site Examinations Regarding Nuclear Energy and Ionizing Radiation	2023	Defines the works and procedures regarding the inspections and on-site examinations conducted by the Nuclear Regulatory Authority for activities related to nuclear energy and ionizing radiation and authorized persons, the type and scope of inspections and issues related to inspectors.
Regulation on Clearance and Release of Radioactive Materials	2023	Defines the principles and procedures regarding the release of radioactive materials generated during the activities related to nuclear energy and ionizing radiation.
Regulation on Liability Insurance and Guarantee Regarding Nuclear Risks	2023	Defines the procedures and principles regarding the insurance or the guarantee that the operator must provide, due to the legal responsibilities of the operator regarding nuclear damages arising from nuclear incidents in accordance with the Law No.7381 and The Paris Convention, as amended by the additional protocols to which Türkiye is a party.
Regulation on Radioactive Waste and Spent Fuel Management	2023	Defines the procedures and principles regarding the safe management of radioactive waste and spent fuel.
Regulation on Recording, Notification and Reporting in Nuclear Installations	2024	Defines the procedures and principles regarding the recording, notification, and reporting of activities carried out and events occurring during the design, site, manufacturing, construction, commissioning, operation, and decommissioning processes of nuclear installations.
Regulation on Security of Nuclear Facilities and Nuclear Materials	2024	Defines the principles governing the security measures to be taken during the execution of activities subject to regulatory control regarding nuclear facilities and nuclear materials.

REGULATION	ISSUE DATE	SCOPE
Regulation on the Supply Chain in Nuclear Facilities	2024	Defines the duties and responsibilities of the Organization regarding the supply chain of nuclear facilities, the qualifications of suppliers subject to notification and authorization, and the procedures and principles related to notification and authorization.
Regulation on Independent Oversight Activities in Nuclear Facilities	2024	Defines the duties and responsibilities of the Organization and the companies that will provide independent oversight services, as well as the procedures and principles related to the authorization of these companies, in order to ensure the conduct of independent oversight activities related to nuclear facilities.
Regulation on On-Site Direct Current Power Sources in Nuclear Power Plants	2025	Defines the procedures and principles for demonstrating the functional reliability of rectifiers and batteries used to provide uninterrupted power to safety systems in NPPs.

7.3 SYSTEM OF LICENSING

Prior to July 2018, licensing of nuclear installations was under the responsibility of TAEK regarding nuclear safety, security and radiation protection issues in accordance with the process which is defined in the Decree on Licensing of Nuclear Installations (1983). Licensing process for an NPP comprised of three main stages in succession: Site License, Construction License and Operating License. There were several permits functioning as hold points during the licensing process. These are limited work permit, commissioning permit, permit to bring fuel to site, fuel loading and test operations permit for operating license.

The Decree on Licensing of Nuclear Installations (1983) has been repealed and the Regulation on Authorizations Regarding Nuclear Facilities (2023) now serves as the core legal framework regarding licensing activities.

Regulation on Authorizations Regarding Nuclear Facilities (2023) outlines the authorization process for nuclear facilities in accordance with the provisions of Law No. 7381. According to Law No. 7381, nuclear facilities are defined as the facilities being

established or operating for extracting, producing, processing, using, possessing, reprocessing, or storing nuclear material. The regulation includes provisions for the authorization of NPPs, research reactors, nuclear fuel production and reprocessing facilities, and nuclear material processing facilities including mines. The site of any nuclear facility must be approved by the NDK. The regulation specifies that the following activities require authorization from the NDK:

- Site preparation,
- Equipment manufacturing,
- Construction,
- Commissioning,
- Operation,
- Re-starting operation,
- Modifications affecting safety and security at the facility,
- Decommissioning of the facility.

The regulation adopts a graded approach to authorization procedures and application documents. For instance, for research reactors and nuclear fuel fabrication and reprocessing facilities, the site preparation permit includes site approval, while the construction permit covers the commissioning process. For nuclear

material processing facilities, the construction permit encompasses site approval, site preparation, equipment manufacturing, and commissioning.

According to the Regulation on Authorizations Regarding Nuclear Facilities (2023), in order to establish a nuclear facility, an organization must first submit a notification of intent to the NDK, providing detailed information about the organization and the proposed facility, including contact details, administrative structure, management system certificates, technical experience, and an anticipated project schedule. The NDK registers the organization and prepares the RDL which includes national and international standards and guidelines. The RDL is periodically reviewed and updated as needed to ensure compliance with safety and regulatory requirements.

The proposed site for an NPP must be approved by the NDK. After site approval, the authorization process continues with the site preparation permit. Equipment manufacturing, as determined by the NDK, also requires a permit. The construction permit application must include the plant's construction schedule, system descriptions, quality assurance documentation, and relevant plans and programs. After obtaining the construction permit, the subsequent authorizations are the commissioning permit and the operating license. The application for the operating license must include updated documents reflecting the plant's as-built status, such as a SAR, operational organization and staff information, emergency plans, and updated procedures for operational and accident conditions. After obtaining an operating license, the organization must comply with safety and security regulations, conduct periodic reviews and obtain permit for any significant modifications. Finally, the decommissioning process requires a separate permit to ensure that all activities meet regulatory standards until the site is released from regulatory control.

7.4 SYSTEM OF REGULATORY INSPECTION

Regulatory inspections encompass all phases of a nuclear installation's lifetime. When NDK became operational with transfer of regulatory personnel from TAEK, regulatory inspection activities were also transferred to the NDK's Department of Inspections.

In accordance with PD No. 95, Department of Inspections of NDK have the following responsibilities:

- To inspect or examine on-site of the activities and authorized persons before or after the authorization,
- To prepare annual inspection programs regarding inspection activities in coordination with the relevant departments,
- To carry out the works and procedures related to the implementation of administrative sanctions in matters falling within its scope of duty and authority, in coordination with the relevant service units.
- To carry out the works and procedures related to administrative sanctions in matters that do not require coordination with the relevant service units, in coordination with the Department of Legal Services,
- To receive technical support services from specialized public institutions and organizations, private law legal entities and real persons, within the scope of the inspection and on-site examination, in order to conduct the examination, research, determination and reporting in a way that will not be binding on the Authority in terms of results,
- To inform the authorized person about the findings determined as a result of the inspection activities, to follow up the works and procedures of the authorized person regarding the findings, to report the findings that are not closed positively to the relevant

service units and to carry out the works and procedures stipulated in the relevant legislation in coordination,

- To carry out the works and procedures for the authorization of the inspector of the Authority,
- To perform other duties assigned by the President.

With the establishment of NDK, regulations regarding inspections were updated and the Regulation on Inspections and On-site Examinations Regarding Nuclear Energy and Ionizing Radiation came into force in 2023. This Regulation define the procedures and principles governing inspections and on-site examinations by the NDK for activities involving nuclear energy and ionizing radiation, including the types and scope of inspections and the requirements for inspectors.

Inspectors of the NDK and other NDK personnel assigned to accompany the inspection, has the authority to enter relevant places or facilities for inspection purposes; to supervise the activities and inspect them on the spot; to meet with the people they deem necessary and to conduct examinations, research and investigations on the issues they deem necessary; requesting, examining, retaining or taking copies of all kinds of information, documents and records; to take, remove, retain, properly dispose of or have any material or sample; to make or have measurement, analysis, inspection and testing using any device; to keep visual, audio or written records.

NDK conducted inspections to ensure that the authorized organization complies with the conditions set out in the authorization and applicable regulations. The main philosophy for the regulatory inspection is “Trust and Verify”. However, until trust is established, this is achieved by planning the overall inspection approach, including its scope and content, to conducted encompass not only the authorized organization but also its contractor and supplier chains. Regulation on the Supply Chain in

Nuclear Facilities (2024) sets out the provisions governing the provisions for the procurement process of all equipment used in nuclear facilities. It specifies the permits that must be obtained by the Owner to initiate procurement, the approval requirements for manufacturers involved in supplying equipment important to safety, and the regulatory inspections and sanctions applicable during the procurement process.

The regulatory inspections also cover activities of Independent Oversight Companies, authorized by NDK. The Regulation on Independent Oversight Activities in Nuclear Installations (2024) defines the requirements to ensure that independent oversight activities related to nuclear installations are duly conducted.

To improve the inspection capabilities, technical support is taken from NÜTED, universities and private companies. NDK also sought support of experienced EU regulators and inspection organizations through EU projects to improve its inspection system with their experience.

Enforcement actions were taken, when deemed necessary by NDK in the event of deviations from, or non-compliance with conditions and requirements. The methods of inspection include examination and evaluation of all records and documentation, and surveillance, monitoring, auditing and interviewing of personnel and management, as well as performing of actual tests and measurements in all phases of the installation.

7.5 ENFORCEMENT OF APPLICABLE REGULATIONS AND TERMS OF LICENSES

Law No. 7381 provides provisions for enforcement of applicable regulations and terms of licenses. As a general principle it is stated in Art. 3 para. 3; activities related to nuclear energy and radiation and persons, facilities, devices and materials related to these activities are subject to regulatory control in

terms of safety, security and nuclear safeguards.

Under Law No. 7381, the enforcement system consists of two components: criminal sanctions and administrative sanctions. Art. 24 governs criminal sanctions; however, the implementation of these sanctions does not fall within the regulatory functions of the NDK and lies under the jurisdiction of the criminal courts. Art. 25 regulates administrative sanctions, which include cancellation, suspension, restriction of authorization and administrative fines. The Nuclear Regulatory Board is authorized to decide on administrative sanctions.

The NDK may impose administrative sanctions either individually or in combination. In circumstances where safety or security is endangered, or there is a risk of compromise, the NDK may decide to suspend or restrict authorization in addition to the administrative fine.

Law No. 7381 Art. 25 para. 2 states that in addition to the administrative fines applied pursuant to the first paragraph, an appropriate time is given to the person concerned by NDK to rectify the violations. If the violations are not

remedied within the given time, administrative fines are applied in the amount of twice the previous penalty each time.

If it is determined that the false document, misleading information or the change in the authorization conditions are the basis for the authorization and it is determined that it is not possible to correct it, the authorization is suspended, restricted or cancelled in addition to the administrative fine.

Administrative sanctions to be applied by the NDK are determined using a graded approach, which takes into account the type and nature of the activity, the risk of exposure, the magnitude of the radiation exposure, as well as the presence and magnitude of the damage.

For the implementation of administrative sanctions, Regulation on Administrative Sanctions was first issued in 2021 and re-issued in 2023 with certain revisions. The enforcement process begins with the identification of a violation. Violations are categorized into four levels, depending on their consequences. The Regulation also includes a calculation table and formula designed to quantify the impact of the relevant criteria on the administrative sanction to be applied.

8 REGULATORY BODY (ARTICLE 8)

1. Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.

2. Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.

8.1 ESTABLISHMENT OF THE REGULATORY BODY

Türkiye established its first nuclear regulatory body, the AEC, on 27 August 1956 with Law No. 6821. The AEC was replaced by the TAEK in 1982 under Law No. 2690. Türkiye's transition to a presidential governmental system in 2018 through a constitutional referendum brought along the modification of the governmental institutions. In this context, to improve the regulatory system in Türkiye and to comply with international regulations, NDK was established by Decree-Law No. 702 as explained in more detail in 7.1.1.

Due to procedural reasons, the Turkish Constitutional Court annulled Decree-Law No. 702 and defined one-year period for the date of effect of the decision. In this period, in line with the need for replacement of Decree-Law No. 702 and entered into force on 8 March 2022.

Law No. 7381 contains provisions and requirements on general principles of nuclear safety, security, safeguards and radiation protection; authorizations and inspections; administrative and criminal sanctions; coordination of activities between different governmental bodies regarding interfaces between them while regulating nuclear and radiation facilities and activities; principles of decommissioning and treating and handling of spent fuel and radioactive waste; establishment of independent nuclear regulatory body, NDK and establishment of a national nuclear technical support organizations (TSO), NÜTED.

In addition to Law No. 7381, PD No. 95 entered into force on 8 March 2022 and it lays out the functions and organizational structure of the NDK.

8.1.1 LEGAL FOUNDATIONS AND STATUTE OF THE REGULATORY BODY

The duties and responsibilities of NDK are defined under PD No. 95.

NDK is composed of the Nuclear Regulatory Board and Presidency. NDK is independent regarding regulatory decisions and the decision-making organ in NDK is the Nuclear Regulatory Board.

Nuclear Regulatory Board consists of five members including the President, who also chairs the Board, and Second Chairperson. All Board members are assigned by the President of the Republic of Türkiye. NDK issued the Regulation on Working Procedures and Principles of Nuclear Regulatory Board (2022) in order to define the working procedures of the Nuclear Regulatory Board.

8.1.2 MANDATE, MISSION AND TASKS

The aim and scope of Law No. 7381 are defined in Art. 1. This Article also sets forth the general mandate of NDK as the regulatory control of activities involving the utilization of nuclear energy and ionizing radiation as follows:

“The objective of this Law is to determine, based on the peaceful use principle, the fundamental principles and rules to be applied for the protection of workers, public,

environment and future generations from possible harmful effects of radiation during activities regarding utilization of nuclear energy and ionizing radiation; and to determine the responsibilities of the parties; and to define the organization, duties and authorities of the NDK having regulatory control over these activities; and to define the principles regarding personal rights of the personnel of NDK.”

The responsibilities, duties, and authorities of the NDK are defined in Art. 4 and Art. 5 of PD No. 95. The NDK shall regulate the following activities, topics and areas:

- a) Radiation protection of workers, public, environment and future generations
- b) Safety, security and nuclear safeguards in the activities regarding nuclear energy and radiation,
- c) All activities related to the building, operation, decommissioning and closure of nuclear installations, radiation facilities and radioactive waste facilities.
- d) Extraction, production, transportation, storage, export, import, trade, possession, transfer, processing, reprocessing and use of nuclear materials,
- e) Production, transportation, storage, export, import, trade, possession, transfer, use, installation, modification, dismantling, maintenance and repair of radiation sources.
- f) The possession, transfer, processing, transportation, storage, export, import and disposal of radioactive wastes.
- g) Export and import of substances, materials, equipment, systems, components or related technology determined by the Authority within the scope of nuclear safeguards.
- h) Radiation emergency management.
- i) The qualifications and training of the personnel related to the activities within the scope of its duties and authorities.
- j) Other issues, areas and activities that fall under the scope of its duties and authorities and to be determined by the Board.

8.1.3 AUTHORITIES AND RESPONSIBILITIES

PD No. 95 specifies the activities, topics, and areas to be regulated by the NDK, as well as its duties and authorities. The duties and authorities of the NDK are as follows:

- a) To determine the strategy, target and working principles of the Authority.
- b) To carry out regulatory operations regarding issues within the scope of its duties and authorities.
- c) To grant authorizations; to define and modify the technical, legal, administrative and financial scope and conditions of the authorizations; to restrict, suspend, end, revoke the granted authorizations; to determine and modify the term of the authorizations; to review and evaluate the information and documents submitted to the Authority for or after the authorization; to define and modify the conditions of the granted authorization in view of the concluded evaluations.
- d) To inspect or examine on-site of the activities or authorized persons before and after the authorization
- e) To request and evaluate all kinds of required information and documents from the persons who apply to the Authority for authorization and are authorized, to use this information and documents in compliance with the confidentiality requirements,
- f) To determine the issues that require approval within the scope of safety, security, nuclear safeguards and radiation protection, to give approval and to bring compliance criteria when necessary,
- g) To request the authorized person to carry out an assessment on safety, security, and nuclear safeguards and to request from the authorized person, under the condition of having financial responsibility and legal liability, to take additional measures according to the results of the assessment,

- h) To carry out works and procedures related to administrative sanctions within the scope of Law No. 7381,
- i) To determine whether the authorized persons have fulfilled their obligations related to the insurance or financial guarantee for nuclear liability and related to the special accounts of radioactive waste and decommissioning,
- j) To establish and operate the national radiation sources recording system, national dose registry system, national nuclear material accounting and control system,
- k) To conduct the national radiation monitoring activity or to have it conducted,
- l) To cooperate with the institutions and organizations of other countries and international organizations, to participate in joint activities or to coordinate the activities carried out with these organizations within the scope of its duties and authorities,
- m) To inform relevant national or international organizations about extraordinary events,
- n) To have carried out research and development activities in the field of safety and security necessary to support its regulatory activities,
- o) To exchange information, cooperate and communicate directly with public and private institutions and organizations, non-governmental organizations and the public,
- p) To determine regulatory activities, decisions and opinions to be sent to national and international institutions and organizations, and to be disclosed to the public,
- q) To request all kinds of necessary information and documents related to a subject from all natural and legal persons including public institutions and organizations and/or to examine them,
- r) To determine the training programs for radiation protection for the personnel who

take part in the activities of the authorized persons and determined by the Authority, to ensure that training is given, to carry out the works and procedures related to examination and certification,

- s) To cooperate with AFAD Presidency and relevant institutions and organizations in the management of radiation emergencies that may occur as a result of activities not under regulatory control.

PD No. 95 Art. 5 para. 2 also states that “The Authority cooperates with other authorized institutions and organizations in terms of emergency planning and response, the health of the public and employees, protection of the environment, legal responsibility in the nuclear field, water use and food consumption, land use and planning, transportation of dangerous goods and other areas of which it is a stakeholder, in terms of safety and security, and gives advice to institutions and organizations.”

8.1.4 ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY

NDK is composed of a Nuclear Regulatory Board and Presidency. The decision-making organ of the NDK is the Nuclear Regulatory Board. Nuclear Regulatory Board consists of five members including the President of NDK (who also chairs the Board) and a Second Chairperson. All Board members are assigned by the President of the Republic. President of the Republic also appoints President of NDK and Second Chairperson. The Regulation on Working Procedures and Principles of Nuclear Regulatory Board was issued in 2022.

The Presidency consists of the President of NDK, three vice presidents, and service units.

NDK’s main organization consists of Press and Public Relations Consultancy, Directorate of Board Services and nine service units:

- Department of Nuclear Installations (regulatory activities in nuclear safety),

- Department of Radiation Applications (regulatory activities in radiation applications and radiation facilities),
- Department of Security and Safeguards (regulatory activities in nuclear security and safeguards and transportation and import/export of radioactive materials),
- Department of Radiation Protection (regulatory activities in radiation protection and radioactive waste management safety),
- Department of Inspection (nuclear and radiation safety inspections),

- Department of External Relations (national and international coordination of all kinds of activities within the scope of duties and responsibilities of NDK).
- Department of Legal Services,
- Department of Strategy Development (administrative and financial activities of NDK).
- Department of Support Services (human resources and other supporting services).

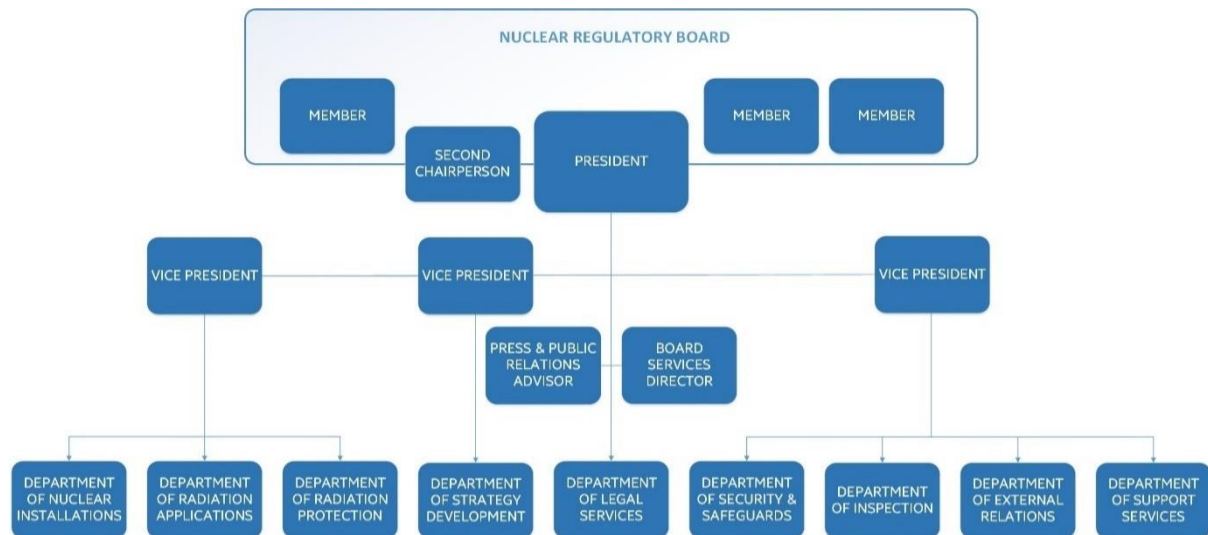


Figure 3 - Organizational Structure of the NDK

8.1.5 COMPETENCE OF THE REGULATORY BODY

NDK recruits its staff through Public Personnel Selection Examination which is a central exam to employ public personnel arranged by Measurement Selection and Placement Centre. NDK has been implementing the rules for hiring its staff through central governmental hiring mechanisms. Since 2011, regulatory body has also implemented its selection procedures for personnel.

International organizations, TSOs, EU projects, regulatory bodies of the vendor countries and regulatory bodies of other countries through

bilateral agreements are also being utilized to enhance in-house training capabilities for its personnel.

Following an IAEA Expert Mission in February 2013, a study was initiated to develop a systematic competency management framework based on IAEA's Systematic Assessment of Regulatory Competence Needs, SARCON, model.

The aim of training of NDK staff is to provide knowledge and experience that result in confidence that staff are qualified to perform the essential functions of regulatory body. Within this context, a variety of tools are being

used including IAEA Technical Cooperation Programme and the EC’s INSC.

Under the IAEA Technical Cooperation Programme, activities for the 2020–2023 cycle have been completed, and the project titled “Enhancing the Sustainability of Safety Culture for the Nuclear Regulatory Authority (TUR9025)”, covering the 2024–2025 cycle, is approaching completion. The project titled “Improving Effectiveness of Regulatory Control Activities of the Nuclear Regulatory Authority”, covering the 2026–2027 period, has completed its design and planning phase, with implementation scheduled to commence in March 2026.

In addition, two projects were implemented (first with TAEK then with NDK) with support from EC: a Pre-accession Assistance (IPA), twinning project with TÜV-SÜD and Instrument for INSC Project with Risk Audit.

The INSC support to the NDK is primarily directed at transferring EU regulatory methodologies, including the formulation of legislation and development of regulatory documents. Within the framework of the INSC, the current project titled “Further Strengthening of the Nuclear Safety and Radiation Protection Regulator in Türkiye” aims to strengthen the regulatory effectiveness of the NDK and achieve a nuclear safety culture comparable to that of European Union (EU) countries. The kick-off meeting was held on November 1 2023, and the project, covering the period from 2023 to 2026, consists of 7 tasks and 15 sub-tasks.

These tools are used to improve the competency of the NDK by gaining international experience in the fields of development and enforcement of regulatory infrastructure, enhancing regulatory capacity in review and assessment of safety documentation and inspection of nuclear facilities.

For the successful licensing process of Akkuyu NPP, Türkiye has plans under implementation for extending its human resources who will be

employed for the licensing and inspection activities of the NPP.

Although Department of Nuclear Installations has got experience with regulating research reactors, it also utilizes the support from IAEA Peer Reviews and contracts with competent foreign TSOs in the field of regulating NPPs. NDK has continuing intention to use TSOs for eliminating the competency gaps when needed.

NÜTED was established at the same time with the NDK as a government owned company for helping to run the services that the NDK needs during the execution of its duties, such as authorization, review and assessment, analyses, inspections, and trainings. provide technical support while performing its duties. After its establishment, NÜTED started providing technical and scientific support to the Department of Inspections. Main activities carried out by NÜTED till to date was surveillance and supporting inspection activities of NDK. NÜTED still provides these services. In addition to these services, review, assessment and consultation services have been provided to Department of Nuclear Installations, on different stages of authorization of the Akkuyu NPP.

8.1.6 FINANCIAL STATUS OF THE REGULATORY BODY

According PD No. 95 Art. 28, the incomes of the NDK are composed of:

- a) Service and operation fees,
- b) Incomes from publications and other similar items,
- c) Donations and grants,
- d) Incomes from the estates and assets of NDK,
- e) Treasury aids from general budget.

PD No. 95 states that it is essential that NDK’s incomes should cover its expenditures. The NDK cannot accept donations in any way from persons subject to regulatory control.

8.1.7 MANAGEMENT SYSTEM IN REGULATORY BODY

The foundation of NDK's efforts to establish a comprehensive management system is rooted in the initiatives previously undertaken by the former regulatory body, TAEK. In 2014, TAEK developed a management system in line with the ISO 9001 standard, which was subsequently certified by Turkish Standards Institution (TSE) in 2017. Furthermore, in 2018, the "Support to the Regulatory Authority of Türkiye" project was initiated under the INSC, with one of its primary objectives being the enhancement of TAEK's management system.

Following the establishment of NDK, the aforementioned project was taken over, and efforts to establish a management system were significantly intensified. As a result of these efforts, in 2021, NDK's management system was certified by TSE for compliance with both ISO 9001 and ISO 45001 standards. In addition to ISO standards, the IAEA's GSR Part 2: Leadership and Management for Safety was also used as an important reference in the development of NDK's management system.

NDK's management system is integrated and process-oriented, defining how activities are managed, implemented, monitored, and continuously improved. NDK's management system has three main objectives:

1. To ensure the effective and efficient fulfilment of the duties, authorities, and responsibilities assigned to NDK.
2. To establish, maintain, and enhance a consistent level of performance by planning, executing, and controlling NDK's activities.
3. To support the development and sustainability of a regulatory culture within NDK by promoting attitudes and behaviours among personnel and departments that align with the regulatory mission.

The fundamental philosophy of NDK's management system is to foster the

achievement of common goals by establishing an organizational structure in which individuals work collaboratively and in coordination, guided by effective leadership and a strong regulatory culture.

In 2024, NDK published its Regulatory Control Policy and Occupational Health and Safety Policy. In order to implement these policies and define institutional goals and objectives, a five-year strategic plan is being developed. The operational implementation of this strategic plan is ensured through annual work plans. The current strategic plan covering the 2021–2025 period is in effect, and it includes the following strategic objectives:

- NDK's regulatory control competence will be enhanced to guarantee safety in nuclear energy and ionizing radiation-related activities.
- The effectiveness of regulatory control regarding safety and nuclear safeguards will be improved.
- Necessary systems will be established to ensure the effective implementation of radiation protection at the national level, and regulatory activities and coordination with relevant stakeholders will be strengthened.
- NDK will be transparent, reliable, and information-oriented both nationally and internationally.
- Institutional capacity will be developed, and service efficiency will be increased.

The management, core, and support processes within NDK's management system have been established in accordance with both IAEA recommendations and national requirements, and are being implemented, evaluated, and continuously improved.

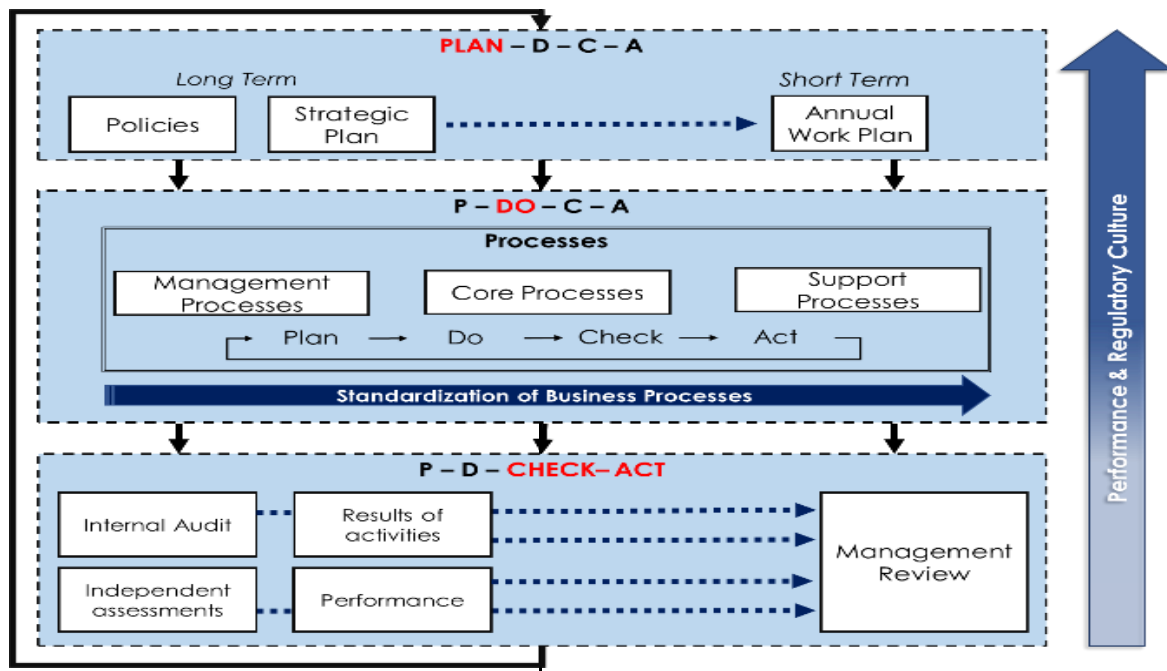


Figure 4 - Fundamental Approach of the NDK's Management System

NDK conducts annual evaluations of its activities through internal audits. In addition, an independent external assessment is carried out each year by the TSE. The financial decisions and transactions of NDK are also subject to annual audits by the Turkish Court of Accounts. Furthermore, NDK benefits from peer reviews as part of its commitment to continuous improvement. Activities performed during the calendar year, performance outcomes, and audit findings are discussed during the management review meeting, where necessary corrective actions are identified and planned.

Figure 4 illustrates the fundamental approach of NDK's management system, spanning from the planning stage to the evaluation stage.

8.1.8 OPENNESS AND TRANSPARENCY OF REGULATORY ACTIVITIES

According to Art. 5 of PD No. 95, the NDK has the following duties:

- To cooperate with the institutions and organizations of other countries and international organizations, to participate in joint activities or to coordinate the activities carried out with these

organizations, in the scope of its field of responsibility.

- To inform relevant national or international organizations about extraordinary events.
- To exchange information, cooperate and communicate directly with public and private institutions and organizations, non-governmental organizations and the public.

As stated in Art. 3, para. 5 of Law No. 7381, it is essential to inform individuals who may be affected by the risk regarding any activity that could lead to radiation exposure for workers, the public, the environment, and future generations. The NDK, whose mission is to ensure the peaceful use of nuclear energy and ionizing radiation, carries out its activities within the framework of eight core values: pioneering, transparent, reliable, effective, peaceful, people and information-oriented, environmentally sensitive, and objective. In line with the principle of transparency, the NDK has effectively implemented public information and consultation mechanisms to build public trust, and make decision-making processes more open and inclusive.

In addition, within the framework of the Regulatory Control Policy published in 2024, the NDK has committed to conducting its regulatory activities in line with six guiding principles: independent decision-making, accountability, consistency in decisions and actions, cooperation and communication, strong organizational capability, and continuous improvement. In accordance with the principle of accountability, the NDK undertakes to adopt an open and transparent approach regarding its regulatory activities, fully aware of its responsibility.

The official website of the NDK (<https://www.ndk.org.tr>) serves as a primary platform for informing the public on nuclear energy and radiation, raising awareness, and ensuring transparent sharing of information regarding regulatory activities. The “Frequently Asked Questions” section addresses topics of public interest and provides clear explanations. For certain events, the NDK also issues detailed press releases to enhance public understanding and provide accurate, accessible information.

Each year, the NDK publishes its Annual Report, which informs the public about regulatory processes related to nuclear energy and radiation, inspections, licensing, environmental monitoring, and international cooperation activities. In addition, the NDK shares its 2021–2025 Strategic Plan on its website, detailing the institution’s objectives, priorities, and activities in the field of nuclear energy and radiation.

CİMER, the Presidential Communication Center, is an electronic system that allows citizens to submit requests, suggestions, and complaints to public authorities. Applications made to the NDK through CİMER are evaluated in compliance with legal procedures and responded to within the specified time limits.

The NDK ensures transparency in its regulatory decisions by publishing them on its official

website. Through the “Drafts” section on its website, the NDK publishes draft regulations related to nuclear energy for public consultation, allowing stakeholders to submit feedback. These contributions are considered in finalizing the drafts.

The NDK, through these practices, ensures that the public is well-informed, actively engaged, and able to contribute to the regulatory process with respect to nuclear energy and radiation safety, in line with the principle of openness and transparency.

8.2 STATUS OF THE REGULATORY BODY

The NDK is intended to be an independent nuclear regulator and in order to protect the independence of NDK and enable it to make regulatory decisions without undue pressure or constraints, PD No. 95 regulates that no authority or organization has right to give orders to NDK.

PD No. 95 states that “the Authority independently fulfils and uses the duties and powers given to it by Law No. 7381, this PD and other relevant legislation. Authority decisions must not be subject to expediency control. No organ, authority or person can give orders or instructions to influence the decisions of the Authority”. The NDK independently implements its duties and uses authorities assigned to it by this PD. Decisions taken by NDK could not be subject to propriety audit. NDK shall not be given any responsibilities which shall weaken its regulatory activities, conflict with these activities or prevent NDK from conducting its activities effectively. The property and assets of NDK shall be deemed as State property. The property, assets, rights and receivables of the Authority could not be seized and could not be pledged. The Authority may establish units affiliated with the headquarters where deemed necessary for the activities in the scope of this PD.

9 RESPONSIBILITY OF THE LICENSE HOLDER (ARTICLE 9)

Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.

Prime responsibility for the safety of a nuclear installation is on the holder of the relevant license. This responsibility is stated in Law No. 7381.

Law No. 7381, Art. 5, para. 3 states that “The authorized person has the prime responsibility to ensure safety and security in an activity or at a facility. To comply with the terms and conditions of a granted authorization and related legislation or to be under regulatory control or delegation or contracting to outsource its responsibilities, shall not reduce or remove the responsibility of the authorized person.”

Law No. 7381, Art. 5, para. 1 related clauses state that:

“Authorized legal persons shall, within the framework of the conditions of the authorization granted and bearing all responsibilities;

- (a) Provide radiation protection, safety and security during the activity,
- (b) Ensure that the activity is carried out by sufficient number of competent personnel with a culture of safety and security,
- (c) Provide the necessary organizational structure, equipment and financial resources to carry out the activity in a safe and secure manner,
- (d) Ensure that the necessary training is given to the personnel,
- (e) Perform safety and security assessments at the frequency determined by the NDK,
- (f) Carry out its activities with an appropriate management system,
- (g) Keep the records, make notifications and reporting as defined in legislation and management system,

- (h) Submit all information and documents required by the NDK in the required form, content and scope,
- (i) Conduct research and investigation required by the NDK regarding safety and security or have them conducted,
- (j) Fulfil its obligations concerning nuclear safeguards,
- (k) Within the scope of inspections conducted by the NDK, perform required corrective and preventive activities within the period of time,
- (l) Carry out on-site management of radiation emergencies, cooperate with AFAD Presidency and other relevant institutions and organizations in the management of off-site emergencies,
- (m) As a result of the assessments, fulfil additional obligations related to safety, security and nuclear safeguards as determined by the NDK,
- (n) Ensure the conditions for releasing from regulatory control.”

The Law No. 7381, Art. 5, para. 6 states that “The authorized person's responsibilities end with the release from regulatory control. Dismissal of the authorized person, restriction, suspension or cancellation of his/her authority and similar situations shall not relieve him/her of his/her responsibility. In such cases, if the NDK evaluates that there is a weakness in terms of security, safety and nuclear safeguards, all kinds of measures to ensure security, safety and nuclear safeguards may be taken by the NDK, provided that the legal and financial responsibility belongs to the authorized person.”

Law No 7381, Art. 5, para. 4 states that “The authorized person must not abandon the place of operation or facility, nuclear material, radioactive source or radioactive waste unless their obligations related to the activity ends.”

Law No 7381, Art. 5, para. 5 states that “The authorized person must fulfil the financial obligations under this Law.”.

Law No 7381, Art. 5, para. 2 states that “(2) Authorized real persons carry out the activities for which they are authorized, in accordance with the relevant legislation and authorization conditions, giving utmost importance and priority to safety and security.”.

Law No. 7381, Art. 7, para. 1 states that “The activities and authorized persons within the scope of this Law are subject to the inspection of the NDK. Within the scope of the authorization, the NDK may also inspect the activities of the contractors, subcontractors, suppliers and sub-suppliers of the authorized persons. Inspections may be conducted, scheduled or unscheduled, announced or unannounced, at any day of the year and at any time of the day, including public holidays.”.

Law No. 7381, Art. 7, para. 3 states that “The provisions of the Law on Construction Inspection (dated 29/6/2001 and numbered 4708) and provisions of the Zoning Law (dated 3/5/1985 and numbered 3194) on technical liability do not apply to the structures to be built on the sites of the licensed nuclear facilities and radioactive waste facilities. All responsibility for these structures belongs to the authorized person. The control of these structures is carried out by the NDK. This situation does not remove the responsibility of the authorized person partially or completely. Inspections can also be carried out together with public institutions and organizations that are specialized in this field. The demands of the NDK within this scope are met by specialized public institutions and organizations without delay.”.

Law No. 7381, Art. 7, para. 4 states that “In addition to the supervision of the Authority; authorized legal entities receive services from authorized companies for third party surveillance of activities determined by the NDK, including the inspection of structures related to nuclear facility or radioactive waste facility. The activities, authorities and

responsibilities of these companies and the procedures and principles regarding service procurement are determined by the NDK by regulation.”.

Law No. 7381, Art. 7, para. 7 states that “Authorized persons pay the fees determined by the NDK for the inspections of the NDK.”.

Law No. 7381, Art. 7, para. 5 states that “The persons, who are subject to inspections shall be obliged to provide all necessary conditions and take all safety measures in order for the inspectors of the NDK and the persons appointed by the NDK to perform their duties freely and on time.”.

Law No. 7381, Art. 7, para. 6 states that “Those subject to nuclear safeguards inspections, shall comply with their obligations indicated in the relevant legislation during the inspections performed under the international obligations related to nuclear safeguards inspections by the inspectors of IAEA, who are approved by the Republic of Türkiye. These inspections are accompanied by the NDK’s representative.”.

Law No. 7381, Art. 5, para. 6 states that “The authorized person’s responsibilities end with the release from regulatory control. Dismissal of the authorized person, restriction, suspension or cancellation of his/her authority and similar situations shall not relieve him/her of his/her responsibility. In such cases, if the NDK evaluates that there is a weakness in terms of security, safety and nuclear safeguards, all kinds of measures to ensure security, safety and nuclear safeguards may be taken by the NDK, provided that the legal and financial responsibility belongs to the authorized person”.

Related provisions, which indicates the responsibilities of the operator on the Paris Convention are also embedded to Law No. 7381.

Law No. 7381, Art. 12, para. 1 states that “In cases where there is no provision in this Law on nuclear damage caused by nuclear incidents,

the provisions of the Paris Convention shall apply.”.

Law No. 7381, Art. 14, para. 1 states that Operators shall be obliged to take out an insurance or provide another guarantee for each nuclear facility or transport activity in the amount of the upper limit determined in Art. 13, at the time and in accordance with the conditions determined by the NDK.

Law No. 7381, Art. 14, para. 4 states that “The operator shall take out a new insurance or renew the guarantee before the expiry date of this insurance or financial guarantee, instead of the expiring insurance or guarantee. The renewed insurance or financial guarantee is notified to the NDK. The conditions regarding the termination of the obligations of the Operator in this context are determined by the NDK.”.

Regulation on Recording, Notification and Reporting in Nuclear Installations (2024), Art.5 para.1 states that “The Organization shall record, notify and report as set out in this Regulation and the relevant legislation, and submit these documents to the NDK in accordance with the method, period and content as specified by the NDK.”.

Art. 6, para. 7 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that “The Owner/operator shall procure or ensure the procurement of measurement, analysis, testing, inspection, calibration and similar services related to the activities subject to regulatory control from real persons certified in their field or from its own units or other organisations, provided that they are accredited in their field and comply with the additional conditions determined by the NDK, if any.”.

Art. 6, para. 8 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that “During the authorization or execution of an activity, the Owner/operator shall;

a) submit all kinds of additional information and documents to the NDK within the prescribed period.

b) conduct and report research and investigations related to safety and security within the framework of the program approved by the NDK”.

Art. 6, para. 9 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that “The Owner/operator shall immediately notify the NDK of any changes in the information and documents submitted within the scope of authorizations regarding safety and security and shall submit updated documents to the NDK when necessary.”.

Art. 6, para. 11 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that “In the case of new information or findings that may adversely affect safety and security are obtained during an authorized activity, the Owner/operator shall plan the measures including the necessary research, examination and improvements to maintain safety and security within three months and submit them to get NDK’s consent. Following the NDK’s consent, the implementation of the plan shall be started within twelve months in accordance with the schedule in the plan. After the plan is implemented, the results shall be reported to the NDK within one month. The deadlines may be extended provided that it is requested by the Owner/operator with justification and deemed appropriate by the NDK.”.

Art. 14 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that:

- 1) “Regulatory control of nuclear facilities shall be carried out within the scope of manufacturing, site, construction, commissioning, operation and decommissioning processes.
- 2) The Owner/operator carries out the activities in each process and the works within the scope of the activities by competent, authorized and sufficient

number of personnel within the framework of the conditions defined in the relevant authorization.

- 3) The Owner/operator determines the records and reports required to be kept in each process in the relevant management system documents, keeps the records, prepares the reports and keeps them until the nuclear facility and site are removed from regulatory control, without prejudice to the provisions of other legislation. These documents and records shall be kept open to the inspection of the NDK and shall be submitted to the NDK upon request.”.

Art. 15, para. 5 of the Regulation on Authorizations Regarding Nuclear Facilities (2023) states that “The Owner/operator that receives a manufacturing permit for equipment important for safety shall ensure the following;

- (a) Submits the changes in the production schedule to the NDK.
- (b) Notifies the NDK before starting production.
- (c) If more than one number is to be manufactured, a single notification may be made, provided that the design and manufacturer remain unchanged.
- (d) The equipment shall be manufactured by manufacturers who have received an authorization certificate from the NDK.”.

The responsibilities of the License Holder are set out in detail in the Regulation on

Authorizations Regarding Nuclear Facilities (2023) encompassing the site, construction, commissioning, operation, and decommissioning processes.

Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) determines the safety principles to be complied by the authorized person in NPPs to achieve the nuclear safety objectives defined by the NDK.

The license holder arranges his organization and distribution of responsibilities according to the Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022). This regulation covers all the stages during the lifetime of a nuclear installation.

Akkuyu Nuclear JSC will establish a training center for the Akkuyu NPP. The Training Center of Akkuyu NPP will aim at performing job training and maintaining the qualifications of the operation-related personnel (operating personnel, maintenance and repair personnel, engineering support personnel), including theoretical training and practical training with the use of training hardware (simulators, training sites, specialized training classes).

TÜNAŞ, as the owner of the Sinop and Kızılköy NPP projects, will obtain insurance or other financial guarantees for each facility in accordance with Law No. 7381 and relevant regulatory provisions. This insurance will ensure liability coverage in line with national legislation and Türkiye’s international obligations under instruments such as the Paris Convention.

10 PRIORITY TO SAFETY (ARTICLE 10)

Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear installations shall establish policies that give due priority to nuclear safety.

The fundamentals of national safety policy have been established under Law No. 7381 which determines the fundamental principles and rules to be applied for the protection of workers, public, environment and future generations from the possible harmful effects of radiation during the conduct of activities related to nuclear energy and radiation.

The principle of priority to safety is clearly stated in the Art. 3 para. 4 of Law No. 7381 as “For the activities within the scope of this Law, prioritising the provision of safety and security is essential”.

NDK achieves regulatory control over nuclear installations in accordance with its duties and authorities defined in Law No. 7381 and in the PD No. 95 through a comprehensive authorization system, which is defined in Art. 4 of Law No. 7381, in order to assure that nuclear installations are utilized with proper consideration for nuclear safety. The authorization system of NDK guarantees that proper measures to protect workers, public, environment and future generations and to ensure nuclear safety are taken during the use of nuclear installations. The primary responsibility for the safety is assigned to the licensee.

Processes regarding authorizations, authorization conditions, application, scope and validity periods of authorizations, as well as issues regarding renewal, restriction, suspension, cancellation or authorization of another person for a previously authorized activity are determined by regulations issued by the NDK. For issues not covered by national regulations, NDK follows IAEA safety requirements.

The aforementioned NDK regulations in which the responsibilities of licensees are defined in detail, require licensee to adopt an organisation

ensuring that the safety is prioritized in activities for design, construction, commissioning, operation and decommissioning of nuclear installations.

The detailed regulatory requirements and obligations related to the process-oriented management system — which is to be established, maintained, and continuously improved by the licensee, prioritizing safety and supporting a strong safety culture — are defined in Law No. 7381 and in the Regulation on Management System in Nuclear Facilities, Radiation Facilities, and Radioactive Waste Facilities (2022).

NDK fulfils its mission and duties as a regulatory authority with the understanding of

- ensuring a high level of nuclear safety continuously,
- ensuring that a safety and security culture understanding, which shows that nuclear safety issues are given the highest importance, is adopted by all NDK employees and is reflected in NDK's activities,
- ensuring that regulatory activities and decisions are carried out and taken independently without being influenced,
- having and maintaining the necessary competence by constantly increasing the knowledge, experience and culture of NDK employees so that regulatory decisions could be made in a timely and accurate manner,
- continuously improving the effectiveness of regulatory activities by applying management system tools.

In accordance with the IGA, Akkuyu Nuclear JSC is held responsible for the design, construction, commissioning, operation, and

decommissioning of the Akkuyu NPP. As Akkuyu Nuclear JSC states in the Safety Policy, the assurance of safety, occupational health and environment protection is Akkuyu Nuclear JSC's top-priority task and vitally important need during the performance of all and any activities of the Akkuyu Nuclear JSC. At the same time, Akkuyu Nuclear JSC consistently, persistently and steadily performs the obligations stipulated in the CNS and follows requirements and recommendations of IAEA in terms of safety assurance, and strives to continuously improve the activities aimed at ensuring safety, occupational health and environment protection at all stages of the NPP life cycle.

The top-priority objectives of the safety policy of Akkuyu Nuclear JSC are:

- maintaining the highest attainable level of safety at all stages of the NPP life cycle based on the commitment to flawless performance of all and any safety-affecting actions in accordance with requirements of the applicable laws and standards in the field of nuclear energy uses, putting safety above the Akkuyu Nuclear JSC's production activity issues,
- common understanding of expectations in regard to safety-related activities of employees of the Company and contracting organizations,
- ensuring and maintaining an acceptable safety level on the basis of compliance with the requirements established in the Company, a critical stance and commitment of each employee to impeccable performance of all safety-affecting actions,
- achieving and maintaining a high level of (strong) safety culture,
- acceptance of this Policy, as well as ensuring acknowledgement by all Akkuyu Nuclear JSC's employees of their personal liability and conscious attitude to safety.

For the purpose of achieving the pre-set objectives and further developing and improving of the company, the Safety Policy of Akkuyu Nuclear JSC is aimed at:

- ensuring compliance of the Akkuyu Nuclear JSC's objectives, tasks, policies, and strategies with this Policy,
- planning and performing all types of activities, which are important to safety, on the basis of compliance of the requirements of the applicable regulatory documents in the field of safety with regard to the graded approach,
- implementing a strategy and activities in the field of safety improvement, and searching for more efficient methods of applying the requirements and, where possible, improving the existing approaches to safety assurance,
- maintaining an efficient organizational structure, clear allocation of obligations and liability, proper qualification, competence, and executive discipline of the Akkuyu Nuclear JSC's employees,
- ensuring awareness of all employees in regard to nuclear safety issues, which creates a critical stance, including the possibility of direct approach by any employee to the superior management with a message on incorrect or insufficient response to a notice of safety issues,
- creating commitment to the safety culture principles during performance of activities at all stages of Akkuyu NPP life cycle among employees of the Akkuyu Nuclear JSC and contracting organizations, conducting a safety level self-assessment, and safety culture assessment and self-assessment,
- functioning of an efficient system of internal safety and quality control,
- ensuring quality at all stages of Akkuyu NPP life cycle through development and implementation of common Quality Assurance Programs of Akkuyu

Nuclear JSC, Quality Assurance Programs for stages of Akkuyu NPP life cycle (Quality Plans) during performance of a licensable type of activity, as well as quality assurance control in regard to the products being delivered to Akkuyu NPP, works being performed, and services being rendered,

- monitoring of safety-assurance-related activities of the contracting organizations that perform works or provide services for the Akkuyu Nuclear JSC,
- creating the mechanisms aimed at determination of the significance of changes of technical, administrative, or organizational nature, as well as the documentation related to safe operation of a facility in terms of safety, and management of these changes,
- decision-making based on risk analysis, proven positive practice, and technical-and-economic feasibility, while respecting the priority of safety;
- periodic review of safety issues in accordance with the regulating requirements;
- efficient and effective functioning of the internal safety and quality control system of Akkuyu NPP to prevent the events that may lead to an adverse impact on employees, the population, and the environment during construction, normal operation, anticipated operational occurrences, and accidents at Akkuyu NPP;
- taking actions to make sure that radiation effects on employees and the population are kept at reasonably achievable low level in all and operating states;

- creating and maintaining efficient safety devices against potential radiation hazards in order to protect individuals, society as a whole and the environment from the harmful effects of ionizing radiation;
- ensuring protection of employees in case of an accident at Akkuyu NPP, and taking efficient emergency-readiness and emergency-response actions;
- analysing and using global experience in NPP operation, including the NPP construction and operation experience accumulated in Rosatom State Corporation, including possible technical achievements, research and development, and information on the agreed corrective actions and implemented required improvements;
- using lessons learned and positive global practices in the field of safety assurance;
- providing the Company's activities with sufficient amount of resources and funds to ensure safety and implement improvement plans;
- creating a motivation system, including application of the "no fault-finding" principle, as well as providing employees with a possibility to make proposals in regard to safety issues;
- maintaining a constructive dialogue during interaction with government authorities and national safety regulation authorities in the field of nuclear energy uses;
- maintaining public relations and relations with local government authorities, providing mass media outlets with reliable information of the Company's activities.

11 FINANCIAL AND HUMAN RESOURCES (ARTICLE 11)

i. Each Contracting Party shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of each nuclear installation throughout its life.

ii. Each Contracting Party shall take the appropriate steps to ensure that sufficient numbers of qualified staff with appropriate education, training and retraining are available for all safety-related activities in or for each nuclear installation, throughout its life.

11.1 FINANCIAL RESOURCES

11.1.1 FINANCING OF SAFETY IMPROVEMENTS

In accordance with Law No. 7381 Art. 5.1.c the authorized person is responsible for provision of necessary organizational structure, equipment and financial resources for safety and security of the licensed activity. Furthermore, according to Art. 5.1.ġ, authorized person is responsible for conducting necessary research and surveys regarding safety and security. The NDK may also request the authorized person to conduct these research and surveys. After conducted assessments, the NDK may bring additional obligations in accordance with Art. 5.1.j to improve safety, security and safeguards.

Akkuyu Nuclear JSC, as the Owner/Operator, will be responsible to ensure the necessary financial provisions for safety improvements to the nuclear installation over its operational lifetime. Planned maintenance expenses are considered in the operational costs of the plant. Future investments needed to ensure safety during the plant operation (for example as a result of equipment aging/wearing/obsolescence or additional international requirements in the future, innovative design solutions, etc.) will be financed, in general, through the Akkuyu Nuclear JSC revenue, which will be accumulated through electricity sales.

In addition, annual payments to an internal safety account of Akkuyu Nuclear JSC will be made throughout the operation of the plant. This special account for safety will accumulate funds on an annual basis, which will be used for

safety-related modernization programs. As mentioned above, these may include, inter alia, modernizations required to replace aged or obsolete equipment, to comply with future international safety requirements, and to apply innovative design solutions, etc.

The following main principles will apply:

- Priority will be given to financial resources necessary to ensure the safety of the nuclear installation throughout its operational lifetime, including measures to comply with the actual safety requirements,
- An adequate organizational structure and procedures will be established to support the proper planning of necessary measures and to ensure the availability of the requisite financial resources for their implementation,
- Attention will be paid both on sufficiency and on timely provision of such financial resources,
- While in general, financing for safety during the plant operational lifetime will be ensured through electricity sales' revenue, the following specific sources could be used:
 - Akkuyu Nuclear JSC cash balance;
 - Akkuyu Nuclear JSC special safety account;
 - Credits.

11.1.2 FINANCIAL PROVISIONS FOR DECOMMISSIONING, SPENT FUEL AND RADIOACTIVE WASTE

The financing of radioactive waste management and decommissioning in Türkiye is determined by Law No. 7381, intergovernmental agreements and related regulations.

Regulation on Radioactive Waste Management Special Account and Decommissioning Special Account and the Accounts Management Board entered into force on 14 February 2023 and contains provisions regarding;

- The working procedures and principles of the Board,
- Works and transactions related to the activities of special accounts,
- Calculation methods of fees and financial guarantees,
- Audit and reporting.

With regard to the financial responsibility of the authorized person, the person authorized for the activity generating the radioactive waste and spent fuel shall bear full financial responsibility for all costs associated with the management of radioactive waste and spent fuel. As per Law No. 7381 and Regulation on Radioactive Waste Management Special Account and Decommissioning Special Account and the Accounts Management Board (2023) the operator, shall make its contribution payments to radioactive waste management special account and decommissioning special account separately. The organization applying for authorization to operate NPPs deposit their guarantee payments into the special accounts separately prior to the issuance of the authorization. In this regard, radioactive waste management special account and decommissioning special account were opened at ETKB Central Accounting Unit.

The Accounts Management Board determines the contributions to be paid to special accounts for NPPs per unit of electricity generated

(kilowatt hour), and the amount of guarantees per installed power (megawatt). The Accounts Management Board approves the adequacy of the guarantee submitted to the special accounts, confirming that the costs necessary for radioactive waste management and decommissioning could be covered in case of early decommissioning of the facility and notifies the NDK. Such notification is a condition for the operating license of a facility.

According to the Regulation on Radioactive Waste Management Special Account and Decommissioning Special Account and the Accounts Management Board (2023), the radioactive waste management cost plan and the decommissioning cost plan are defined. The radioactive waste management cost plan shall be prepared by TENMAK and submitted to the ETKB. The radioactive waste management cost plan shall include; the project schedule, disposal method, characteristics of the disposal facility, expenses related to the activities and all expenses related to the disposal of radioactive wastes, including all expenses related to the disposal of radioactive wastes, the calculation method of the expenses and detailed cost and risk analyses. The decommissioning cost plan shall be prepared by authorized persons after the application to obtain an operating license for facilities and submitted to the ETKB. The decommissioning cost plan includes the project schedule, dismantling method, methods of making the facility site compatible for re-use conditions, the expenses related to the activities, including all expenses related to decommissioning, the calculation method regarding the expenses and detailed cost and risk analyses including early decommissioning.

As stated in Law No. 7381, incomes of special accounts consist of contributions and guarantees to be paid, revenues obtained from the evaluation of special accounts, donations and other revenues.

Any revenue collected for these special accounts must be used solely for the intended purpose. The payment is made from the

radioactive waste management special account to TENMAK to cover the expenses related to the activities including determination of areas for establishing a radioactive waste disposal facility and related siting studies, design, authorization, construction, operation, maintenance, closure, and release of the radioactive waste disposal facility from regulatory control, and research and development activities for the specified purposes. Besides, the payment from the decommissioning special account is made to the authorized person to cover the expenses related to the activities including decommissioning procedures, covering the costs of the disposal of radioactive wastes generated during the decommissioning of facilities and making the site compatible with the conditions for the end state of the facility site.

With regard to the Akkuyu NPP, the IGA signed between the Turkish and Russian parties for construction and operation of the Akkuyu NPP stipulates that Akkuyu Nuclear JSC, which owns and operates the plant, will be responsible for decommissioning and waste management of the NPP (Art. 12, para. 4). The Akkuyu Nuclear JSC is obliged by the IGA to make the necessary payments to special accounts. For the electricity purchased by the Turkish side according to the power purchase agreement, Akkuyu Nuclear JSC shall pay:

- 0.15 US dollar cent per kWh to the radioactive waste management special account and
- 0.15 US dollar cent per kWh to the decommissioning special account.

Regarding the electricity sold outside the framework of the power purchase agreement, Akkuyu Nuclear JSC shall make payments to these special accounts in accordance with the amounts stipulated by the Accounts Management Board.

11.1.3 ADEQUACY OF FINANCIAL PROVISIONS

In accordance with Law No. 7381 Art. 5.5, the authorized person shall fulfil the financial obligations defined under this Law.

According to Art. 19 of the Regulation on Authorizations Regarding Nuclear Facilities (2023), an operating license for nuclear facilities is granted if:

- a) The NDK determines that the issues directly or indirectly affecting safety or security have been adequately met,
- b) Insurance or financial guarantee obligations related to legal liability for nuclear damage have been fulfilled,
- c) The Accounts Management Board notifies the NDK of the adequacy of the financial guarantee to cover the costs required for radioactive waste management and decommissioning.

In addition, according to the fourth paragraph of Art. 20 of the Regulation, decommissioning permission can only be granted if it is demonstrated that the site can be made environmentally compatible and if it is confirmed by the Accounts Management Board that accumulated funds or financial guarantee for the decommissioning costs are sufficient.

In accordance with Art. 10.2 of Law No. 7381, the Accounts Management Board determines the contributions to be paid to special accounts for NPPs per unit of electricity produced (kilowatt hour), and the amount of financial guarantees per installed power (megawatt). For other facilities and applications, the contributions to be paid to special accounts and the amount of financial guarantees; are determined by the Accounts Management Board, taking into account the type of facility and application, the class, amount and activity of the waste. Contributions to be paid to special accounts and the amount of financial guarantees are reviewed every year and updated to cover the foreseen expenses.

Art. 10.7 of Law No. 7381 states that “In case the amount in the special account for radioactive waste and decommissioning is insufficient due to expenses that may be incurred during decommissioning or related to radioactive waste management, or due to early decommissioning of the facility, the costs shall be covered by the financial guarantee provided by the authorized person. If the financial guarantee is insufficient, the remaining amount is collected from the authorized person. Taking into account the amount accumulated in the special account, the amount of financial guarantee in question is determined again upon the request of the authorized person.”. Law No. 7381 includes provisions to regulate nuclear liability in accordance with the Paris Convention. The Operator has to obtain an insurance or financial guarantee to cover up to 700 million euros of nuclear damage.

11.1.4 PROCESSES FOR THE ASSESSMENT OF THE FINANCIAL PROVISIONS

Modernization programs will be developed for 6-year periods. They shall be based on the design requirements, actual plant status, international safety cases, development etc. Programs will include financial resources needed for their implementation.

Repair and maintenance planning shall be made annually, based on the design requirements, equipment maintenance instructions, equipment status, as well as experience in operation of NPPs. Annual planning will include financial resources needed for implementation of the maintenance.

11.2 HUMAN RESOURCES

The nuclear sector, which includes government institutions, industry, regulatory bodies, educational institutions and R&D institutions/organizations, needs a workforce equipped with the necessary competencies.

The studies carried out to educate and train the necessary human resources for the NPPs

planned to be established in Türkiye and the studies to be carried out on small modular reactor technology, to manage the existing human resources and to make the nuclear sector attractive are carried out by the relevant stakeholders under the coordination of the ETKB.

The procedures and principles regarding the competence, training and qualification of the personnel working in nuclear facilities, the requirements regarding the organizational structure of the Owner/Operator and the authorization of the operating personnel are regulated by the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

11.2.1 NATIONAL HUMAN RESOURCES DEVELOPMENT

For the Akkuyu NPP Project, the IGA, Art. 6, para. 5 stipulated that Turkish citizens shall be trained and widely employed for the purpose of operating needs of the Akkuyu NPP. Such training shall include, but not be limited to, the establishment of an on-site full scope simulator.

The Russian party will provide support and assistance in training of professional staff for nuclear power programme in Türkiye. The selection of Turkish students to pursue studies in nuclear energy began in 2011. As of May 2025, 322 Turkish students have graduated from Russian universities, while 75 are continuing their studies. Akkuyu Nuclear JSC provides support and assistance in the training of professional staff for nuclear power plant development in Türkiye. The company is also seeking new opportunities to enhance its own educational and training capabilities in order to better ensure the long-term availability of qualified human resources and to offer opportunities to local citizens.

Art. 170 of the PD No. 1 states that development of the local human resources needed for the NPPs to be established in Türkiye shall be developed by the NEIPGM within ETKB. In accordance with the said PD,

the NEIPGM carries out the tasks of “ensuring coordination between institutions for the preparation of the necessary infrastructure in the fields of legislation, human resources, education, industry and technology regarding the implementation of NPP projects and carrying out or having carried out the necessary studies in these fields”.

In this context, ETKB carries out studies to determine the fields needed in the nuclear sector, to determine the number of students and the subjects of postgraduate education within the scope Law on Selection and Placement of Students to be Sent Abroad for Postgraduate Education Scholarship of the Ministry of National Education (MEB) numbered 1416. 466 students have been selected since 2016 to receive education in the nuclear field. Graduates are employed in ETKB, NDK, TENMAK and TÜNAŞ. Moreover, a cooperation protocol was signed between the ETKB, Rosatom State Atomic Energy Corporation, Akkuyu Nuclear Joint Stock Company, Hacettepe University, Istanbul Technical University, Saint Petersburg Peter the Great Polytechnic University, MEPHI National Research Nuclear University on 17 March 2022 for the development of joint education and training programs between Russian and Turkish universities in the field of nuclear energy at undergraduate and graduate levels.

Additionally, in order to meet the need for technical personnel to take part in the construction and installation works of Akkuyu NPP, the “Vocational Education Cooperation Protocol between the MEB, the ETKB, Akkuyu Nuclear Inc., Titan2-IC İtaş İnşaat Inc.” was signed on 26 June 2020.

Also, Silifke Nuclear Energy Vocational and Technical Anatolian High School, which is the first nuclear high school in Türkiye and started providing education in the 2023-2024 academic year, has started providing education in order to train the intermediate staff workforce needed by the nuclear sector.

As a result of the studies conducted with Akkuyu Nuclear JSC., the necessary qualifications (educational status, certificates, licenses, work experience, foreign language knowledge, psychological and physical tests) for each job position to be included in Akkuyu NPP have been determined and compiled into a report.

Under the coordination of ETKB, Akkuyu Nuclear JSC and contractors, two separate "Local Workforce Plans" were prepared for the construction and operation periods (covering the years 2022-2085) in the Akkuyu NPP Project. The plan includes the number of workers, technicians, operators, engineers and managers that will be needed each year on the basis of business lines, together with the anticipated local and foreign rates.

11.2.2 NPP PERSONNEL TRAINING

According to first paragraph of Art. 5 of the Law No. 7381, licensee is responsible for ensuring the activity being carried out by sufficient number of competent personnel, that the personnel receive the necessary training and that the required organizational structure is in place to ensure that the activity can be carried out safely and securely.

The procedures and principles regarding the competence, training and qualification of the personnel working in nuclear facilities, the requirements regarding the organizational structure of the Owner/Operator and the authorization of the operating personnel are regulated by the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

The Akkuyu NPP has been designed, manufactured and is being built by the Akkuyu Nuclear JSC. The commissioning and operation of the Akkuyu NPP will be done by the Akkuyu Nuclear JSC (as owner/operator) which was established according to Turkish laws and is financed by Russian Federation. However, this does not imply that all of the personnel will be Russian. In 2025, Turkish citizens working in

the Akkuyu Nuclear JSC are about 30 per cent of the total workforce. According to Turkish legislation, the formal language of communication is Turkish.

While the training of personnel to be employed at nuclear facilities is regulated by Art. 8 of the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022), the technical competence of operating personnel is regulated by Art. 10 of the Regulation. According to Regulation, licensee is responsible for training of the operating personnel and ensuring compliance of these persons with the requirements for the position they are appointed to. The following training requirements are established in Art. 8 of the Regulation:

- (1) The Owner/Operator prepares and implements the training program, which includes at least the importance of the activities performed by the personnel in terms of safety, radiation protection, as well as the duties and liabilities which need to be performed in case of emergency.
- (2) The Owner/operator determines the person or subdivision within its organizational structure, that will be in charge of implementation of personnel training programs. The Owner/Operator ensures the availability of the required resources and opportunities to implement training.
- (3) The training program includes all stages such as analysis of the need for training in regard to the qualification required for activity performance, planning for and implementation of training, efficiency assessment and development, as well as theoretical and practical training with advanced training, internship, on-the-job training and similar forms of training. Within the scope of this program the owner/operator plans for and implements the regular or individual training, which is aimed at ensuring and maintaining competences of the personnel whose job duties are significant in terms of safety
- (4) The training program contains the details related to:
 - a) Approach to training;
 - b) The structure of the training system, the distribution of duties, powers and responsibilities in the system, its stages, scope, methods and tools;
 - c) Minimum experience, education level and similar conditions that apply during determination of teachers, as well as education level of teachers;
 - d) Training venue and, if there is a simulator, its technical specification;
 - e) Positions which occupation is related to the training aimed at maintaining and acquiring qualification, as well as content and interval of this training;
 - f) Methods of measurement, assessment and documentation of the personnel success achieved in the course of training
 - g) Procedure for creating an examination committee on any exams within the program, its activity and similar activities.
- (5) With regard to the training implemented due to the current and future needs of a facility, operating experience and the results of its assessment, the Owner/Operator regularly revises, analyses and improves the personnel training program. The personnel training program is submitted to the NDK for assessment at the time determined by the NDK and after an update.
- (6) The Owner installs and uses the full-scale simulator, which simulates standard operating conditions, anticipated operational occurrences and accident conditions, at NPPs. In order to show reliability and adequacy of the simulator, the Owner/Operator presents the simulator's description, testing program, test report and similar documents to the NDK before using the simulator for training purposes. The simulator's accuracy and deviation from a real plant are monitored through regular assessments in

accordance with the Owner/Operator's procedures. In case of the comprehensive modifications made to the simulator within the scope of the lessons learned in the course of operating experience, and safety improvements, the simulator adequacy is confirmed by the testing program, with the testing results to be submitted to the NDK. If necessary, the Regulator can demand that the simulator be improved or include additional characteristics.

It is foreseen that for the construction and commissioning of the four units of Akkuyu NPP more than 20,000 persons will be involved, and then about 4000 will be constantly needed during the 60 years of plant operation.

In order to develop connections with technical universities near the NPP and the on-site nuclear training center, which will be created to perform construction works, a protocol was signed between ETKB, the MEB, the EPC-Contractor, the owner and the operator of Akkuyu NPP. Within the scope of this protocol the course "Introduction to Nuclear Power Engineering" and a textbook were developed for senior students. Upon training completion, a student will undergo on-the-job training at the nuclear training center which will be built at the Akkuyu site. After the training is completed, they will be able to work at the NPP construction.

According to the first paragraph of Art. 10 of the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022), "In NPPs and research reactors, the Owner/Operator ensures that the technical competence of the personnel who must be authorized by the NDK is trained in accordance with plant-specific training programs and their competence is measured and certified through examinations."

The Akkuyu Nuclear JSC will provide the training of future operating personnel in a full scope simulator specific to the Akkuyu NPP, by meeting the requirements specified in the sixth

paragraph of Art. 8 of the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

The Akkuyu Nuclear JSC is also intended to use Systematic Approach for Training for attaining and maintaining the competencies of personnel as the aforementioned approach is entirely compatible with the management system as it is also a process based, result oriented, and systematic approach. Through the analysis and design phases, training will be focused on certain necessary job specific competencies. Evaluation of the training programme's effectiveness and continual improvements will ensure maintaining of the personnel competence and training programmes up to date, and significantly contribute to the safe performance. Akkuyu Nuclear JSC developed the personnel training policy and procedure which establishes the main requirements and principles for personnel training.

The training programme for emergencies will be established to train Akkuyu Nuclear JSC staff to ensure the effectiveness of the response. Emergency preparedness exercises will be designed before commencing the operation to ensure that NPP staff and staff from other participating organizations possess the required knowledge, skills and attitudes.

The NDK staff participate as observers in the trainings of operators who will work at the Akkuyu NPP at the Akkuyu NPP site and at the Novovoronezh NPP in Russia.

11.2.3 QUALIFICATION MAINTENANCE

In accordance with the provisions of the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022), qualification maintenance of the NPP personnel must be ensured in accordance with the requirements for personnel training and qualification. The positions, which are subject to periodic and repeated training for personnel competence maintenance, as well as volume,

intervals, methods and tools of such training, and success measurement & assessment methods are established by internal procedure "Training and Qualification Maintenance of Operating Personnel".

The NPP personnel shall meet the requirements of the regulations and shall have a diploma or certificate in education and specialization in order to work on the nuclear installation. The NPP personnel qualification will be maintained in the Training Center at the Akkuyu NPP site, and internship activities will be continued at reference NPP (*In cases where a new NPP is established and the facility/unit has not yet been put into operation, until any of the units in the facility is put into operation*) according to the Nuclear Regulatory Board Decision No. 2024-44/2 dated 4/7/2024. According to the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022):

- a) Theoretical Training
 - Art. 10, Para. 2 of the Regulation
- b) Practical Training
 - Art. 10, Para. 3 of the Regulation
 - A minimum of three hundred hours of training in the facility's full scope simulator (FSS)
- c) Internship
 - Art. 10, Para. 3 of the Regulation
 - Operator candidates who complete the practical training are assigned to the control room as trainee operators for a minimum of one hundred and fifty hours, working on each shift at the facility.

In addition to the above-mentioned legislative requirements the annual volume of NPP personnel training, in compliance with qualification maintenance programs, shall be as follows:

- for operational personnel of the main control room - at least 110 hours, including at least 80 hours of practical training on simulators,
- for other categories of operational personnel - at least 36 hours,

- for other personnel - at least 20 hours.

11.2.4 IMPROVEMENTS TO TRAINING PROGRAMS

In accordance with Art. 8 (5) of the Regulation for Organizational Structure and Personnel of Nuclear Installations (2022), training must be implemented with regard to the current and future needs of a facility, operating experience and the results of own assessment through regular revision, analysis and improvement of personnel training programs.

Akkuyu Nuclear JSC conducts period assessment and improvement of training programs.

In Akkuyu Nuclear JSC training methods and practice are implemented on the basis of timely modification and updating of training programs, computer models, simulators and materials to guarantee that they comply with operating conditions and operation policy.

11.2.5 ASSESSMENT OF THE SUFFICIENCY AND THE QUALIFICATION OF THE NPP STAFF

The requirements for organizational structure and qualification of the operating personnel, as well as the required permits and licenses are determined in the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

Chief Inspector of the NPP arranges preliminary (at the time of hiring) and periodic (in the course of labour activity) medical examination of the employees who handle hazardous substances and deal with dangerous or adverse factors of the production environment.

The NPP specialists, who, depending on their performed functions, must obtain a work permit in the field of nuclear energy uses, undergo preliminary and annual medical and psychological examinations.

Vocational training opportunities are given to young specialists, newly hired employees, employees who are transferred to new positions, etc. in accordance with the specifics of and requirements for the relevant works.

The NPP personnel must have a diploma or certificate of education and major to work at a nuclear installation.

The NPP personnel qualification must be maintained annually in the following forms:

- Off-the-job training aimed at preserving the professional knowledge and skills which were obtained through advanced training courses and/or at other training institutions,
- On-the-job training at the Training Center and NPP subdivisions,
- Repeated, unscheduled and targeted briefings,
- Training in accident mitigation, fire protection and emergency response,
- Simulator training of the NPP's operating personnel including the activities related to power unit start-up/shutdown and the operations that precede scheduled power unit start-up/shutdown,
- Internships including those in the specialized companies, participation in seminars and workshops,
- Training and regular licensing of the NPP employees who work at facilities or perform works under supervision of official supervisory or regulatory authorities and other organizations in accordance with the procedures approved by the relevant authorities,
- Self-study of professional issues.

The NPP personnel qualification must be maintained in accordance with qualification maintenance programs. The programs are developed in accordance with the requirements established by corporate policies of Akkuyu Nuclear JSC.

11.2.6 REGULATORY REVIEW AND CONTROL ACTIVITIES

Responsibilities of the authorized persons are defined in Art. 5 of Law No. 7381. Under this Law, authorized persons shall, within the framework of the conditions of the granted authorization and assuming full responsibility, ensure that the activity is carried out by sufficient number of competent personnel with a culture of safety and security, provide the necessary organizational structure, equipment and financial resources to carry out the activity in a safe and secure manner and ensure that the necessary training is given to the personnel.

The procedures and principles regarding the competence, training and qualification of the personnel working in nuclear facilities, the requirements regarding the organizational structure of the Owner/Operator and the authorization of the operating personnel are regulated by the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

According to this Regulation, the authorized person is primarily responsible for the safe and secure operation of the installation in compliance with license terms, regulatory requirements and relevant legislation. The authorized person within the framework of this responsibility creates nuclear safety and security policies and targets that will ensure the operation of the installation within the framework of safety and security culture, and provides and allocates financial and human resources in a timely manner in line with these targets.

Also, general requirements concerning operator responsibilities, human resource management, and the training of operating personnel are set out in the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008).

In addition to the above regulations, IAEA and vendor country requirements are also used by authorized persons when necessary.

Information and documents demonstrating compliance with the relevant requirements are submitted to the NDK as part of the authorization application. These application documents are reviewed and assessed in accordance with the applicable requirements during the evaluation phase. In addition, inspections are conducted, where necessary,

In addition to the authorization process for the installation, separate procedures are implemented for the authorization of operating personnel. During the operating personnel authorization process, the NDK participates as an observer in the theoretical training, practical training, on-the-job training, and proficiency examinations conducted by the Licensee. The NDK provides the Licensee with feedback on these oversight activities.

Following the completion of the theoretical and practical training by the Licensee., written and practical exams are administered by the Owner/Operator. Candidates who successfully pass these exams apply to the NDK for authorization.

The NDK reviews the candidates' applications and, if the applicants are deemed eligible, conducts an authorization examination. This authorization examination is carried out in

accordance with the “Authorization Exam Implementation Principles and Examination Rules for Operating Personnel in Nuclear Power Plants and Research Reactors” (2025).

11.2.7 COMPETENCY MANAGEMENT ACTIVITIES FOR REGULATORY BODY STAFF

NDK establishes, maintains and improves its human resources for the licensing and inspection activities of the NPP. NDK also uses TSOs to eliminate the competency gaps when needed. A human resource development plan is prepared annually to maintain the competence of the NDK.

As a governmental organization the NDK has to hire civil servants coming through a central governmental selection exam. However, it can apply its selection procedures through written and oral exams to the applicants who passed the central governmental exam.

By the end of July 2025, NDK had 303 personnel of which 99% of whom hold a university degree, with 47% holding a master’s degree and 6% a doctorate (Figure 5). Among the personnel, 70% hold an engineering degree and 9% hold a science degree (Figure 6).

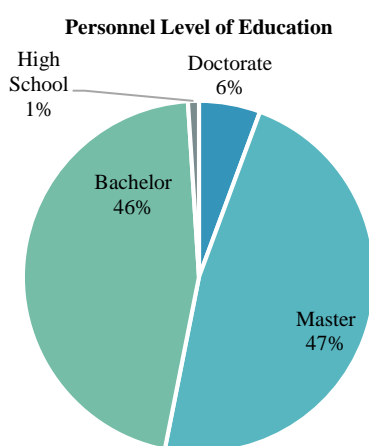


Figure 5 - Education Levels of the NDK Personnel as of July 2025

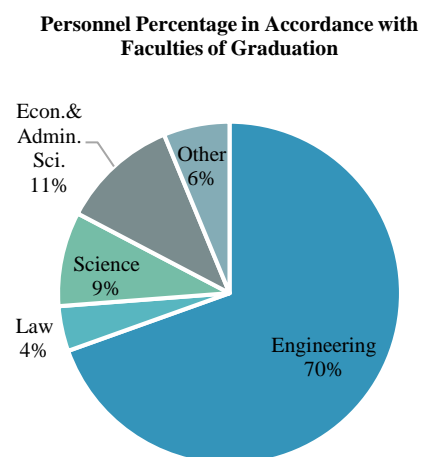


Figure 6 - Personnel Percentage in Accordance with Faculties of Graduation as of July 2025

NDK employs mainly young personnel. NDK is a young organization with average age of 37 years and the average experience level of the NDK personnel is 9 years.

An important source for employees for the NDK is the students sent abroad for graduation studies. By the end of July 2025, 143 students were sent abroad to attend graduate schools in various countries with special assignments from the NDK. These students get scholarship from the MEB in exchange of obligatory service in the NDK. 72 of these students concluded their studies and returned home to work in the NDK.

Law No. 7381 amends the Public Procurement Law No. 4734 to give NDK an exemption for the procurement of goods and services and consultancies regarding regulatory and inspection activities and for the procurement of services and consultancies regarding site and feasibility studies for NPP projects. This amendment facilitates NDK's procurement of TSO services.

NDK has established a TS EN ISO 9001:2015 and TS EN ISO 45001:2018 based integrated management system. The Management of competence is an integral part of the overall management of the NDK. The main objective is to ensure having the correct number of staff with the right and enough competencies at the right time.

11.2.8 TRAINING PROGRAMME FOR REGULATORY BODY

NDK has been trying to increase its capability for the conduct of each function of the regulatory body. Training of staff concentrates on the regulatory process used for reactor oversight and on the special technical functions that a regulator must perform and the results of competency gap analysis are using for the establishment of the training program.

Regulatory processes include enactment and development of regulations, licensing, and inspection activities. Training in these

processes will be gained through rotational assignment in countries with mature regulatory programmes by NDK or through the IAEA. Trainings will be concentrated on review and assessment of PSAR and inspection.

NDK performs training programme as below:

1. Internal trainings

- Entry level training for new staff provided by NDK experienced staff,
- The Internal Training Programme contains 38 subjects including technical, administrative and personal development topics and it targets 948 trainings for the year 2025 approximately. In previous year, the number of trainings performed was 1148.

2. Domestic trainings

- Academic units in Türkiye,
- Other organizations experienced in specific subjects.

3. International trainings

- IAEA,
- EC,
- Bilateral agreements with other regulatory organizations,
- TSO,
- Others.

The aim of training of NDK staff is to provide knowledge and experience that result in confidence that staff are qualified to perform the essential functions of regulatory body. Within this context, variety of tools are being used including IAEA Technical Cooperation Programme and the EC's INSC.

Under the IAEA Technical Cooperation Programme, activities for the 2020–2023 cycle have been completed, and the project titled “Enhancing the Sustainability of Safety Culture for the Nuclear Regulatory Authority (TUR9025)”, covering the 2024–2025 cycle, is approaching completion. The project titled “Improving Effectiveness of Regulatory

Control Activities of the Nuclear Regulatory Authority”, covering the 2026–2027 period, has completed its design and planning phase, with implementation scheduled to commence in March 2026.

In addition, two projects were implemented (first with TAEK then with NDK) with support from EC: an IPA, twinning project with TÜV-SÜD and Instrument for INSC Project with Risk Audit.

The INSC support to the NDK is primarily directed at transferring EU regulatory methodologies, including the formulation of legislation and development of regulatory documents. Within the framework of the INSC, the current project titled “Further Strengthening of the Nuclear Safety and Radiation Protection Regulator in Türkiye” aims to strengthen the regulatory effectiveness of the NDK and achieve a nuclear safety culture comparable to that of European Union (EU) countries. The kick-off meeting was held on 1 November 2023, and the project, covering the period from 2023 to 2026, consists of 7 tasks and 15 sub-tasks.

The MEB grants scholarships to graduate students for attending Master of Science and doctorate studies abroad in fields determined by regulatory body. These students have the obligation to return to Türkiye and work to pay back their scholarships.

NDK also has the self-sustainability in drawing up regulatory training programs. The main activities of this project are:

- Project management,
- Review and improvement of national nuclear regulatory infrastructure,
- Assistance in the development of national nuclear regulatory infrastructure,
- Development of methodologies for review and assessment of licensing documents,
- Establishment of the technical support system for independent safety assessment,
- Development of methodologies for regulatory inspections,
- Training of personnel of regulatory organization.

11.2.9 THE ROLE OF TSO IN REGULATORY ACTIVITIES

Hiring new staff and training them for NDK’s needs would not provide enough technical resources with proper competency in timely manner. As an important adjunct to the regulatory staff, TSOs have the role to supply the NDK with specialized technical skills. For this purpose, the NDK is planning to use TSOs and consultancy services whenever needed in order to accomplish its regulatory functions.

National consultants, engaged for their specific expertise to support the licensing process, are listed in Table 4.

Table 4. National Consultants Worked for the Akkuyu and Sinop NPP Licensing Projects

Title of National Consultants	Institution of National Consultants	Speciality of National Consultants
Professor	Middle East Tech. Uni. (Ankara)	Geotechnics and Earthquake
Professor	Middle East Tech. Uni. (Ankara)	Geology
Professor	Istanbul Tech. Uni. (Istanbul)	Meteorology
Professor	Hacettepe Uni. (Ankara)	Hydrology, Hydrogeology
Professor	Middle East Tech. Uni. (Ankara)	Seismology
Professor	Middle East Tech. Uni. (Ankara)	Structural Design
Professor	Hacettepe Uni. (Ankara)	Strength Analysis
Professor	Istanbul Tech. Uni. (Istanbul)	Nuclear Materials

Furthermore, to improve the competency of NDK, a TSO, NÜTED has been established by Law No. 7381 as a government owned company. At least 51% of its shares will be owned by NDK. NÜTED has the responsibility to provide all necessary TSO services to NDK. Hiring staff and capacity building for NÜTED are implemented in parallel with the needs of NDK.

NÜTED is highly involved in supporting NDK to carry out its regulatory activities. Specific tasks allocated NÜTED to support NDK supervisory activity at the equipment manufacturer's site. To support supervisory activity at the Akkuyu NPP site, NÜTED develops its infrastructure and deploys the on-site representative office. To support NDK inspection functions NÜTED experts are highly involved in controlling safety during construction and commissioning activities conducted at Akkuyu. In addition to inspection support, NÜTED has also been involved in review and assessment activities of NDK for license/ permit applications by Licensee. To ensure expertise support in highly specialized fields, NÜTED is using inhouse and external resources as well. In line with upcoming stages of ongoing NPP project, capability and capacity build up activities have been performed in a

continuous manner. With this regard, a team of experts for verification of neutronics and thermal-hydraulic calculations, has been subject to qualification process where NDK's available computer codes/software are used. And exchanges with other TSOs and RBs to obtain user license of additional widely accepted computer codes that would be used for simulation studies for safety assessments have been carried out. To obtain such tools is vital for successful implementation of capacity build up strategies. As well as review & assessment support, tailor made training support is also provided by NÜTED as per NDK's needs. On-the-job-trainings at Operational NPPs and classroom training for several topics, incorporation with different TSOs has been performed.

To focus on safety-important issues, NÜTED implements the graded approach and establishes a multidisciplinary support system in tight connection with NDK. NÜTED continuously develops its competences to withstand further challenges and support NDK activity across different life stages of a nuclear facility, from construction and installation through commissioning to readiness for normal operation tasks.

12 HUMAN FACTORS (ARTICLE 12)

Each Contracting Party shall take the appropriate steps to ensure that the capabilities and limitations of human performance are taken into account through-out the life of a nuclear installation.

12.1 REGULATORY REQUIREMENTS

The following regulations define safety principles, including human factors to be followed during the design of NPPs to achieve nuclear safety objectives:

- Regulation on Design Principles for Safety of Nuclear Power Plants (2008),
- Regulation on Specific Principles for Safety of Nuclear Power Plants (2008).

To avoid human errors Art. 20, 21 and 23 of Regulation on Design Principles for Safety of Nuclear Power Plants (2008) includes the following requirements to NPP design:

- Parameters to be monitored in the control room are selected, and their displays are arranged, to ensure clear and unambiguous indications of the status of plant conditions important for safety, especially to identify and to diagnose the automatic actuation and operation of a safety system or the degradation of defence in depth (DiD),
- Control room is provided with a display of the information on plant variables needed to ascertain the status in normal operation, to detect and diagnose off-normal conditions, and to observe the effect of corrective responses by control and safety systems,
- The control room is designed to remain habitable under normal operating conditions, anticipated abnormal occurrences and accidents considered in the design,
- The environment in the control room is protected against abnormal conditions that might compromise the operators' effectiveness or jeopardize their health,
- To control accidents within design principles, all necessary facilities are

provided to enable plant personnel to monitor the course of the accident and take necessary action,

- When deviations from normal operating conditions occur, features and systems such as reactivity feedback, which automatically restore normal conditions, are supported by measures such as shutdown, continuous cooling, and protection against the release of radioactive materials. The design also includes safety systems that will automatically activate to provide further protection. When a deviation occurs, an automatic response is provided to provide operating personnel with the necessary time to assess the systems, review possibilities, and decide on required action. The design also provides auxiliary elements and symptom-based emergency procedures to diagnose the incident under these circumstances.

According to Art. 31, para. 2 of the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008), instrumentation shall be available to assist operators, who may at some time be faced with the need to control the course and consequences of an accident beyond the design basis:

“Instrumentation that can be read from the control room or control points, work in all conditions and provide the necessary information to recognize abnormal conditions and monitor the effects of interventions is provided, especially to assist in severe accidents.”

Requirements for qualification of operating personnel as part of human factor are also covered as following in Turkish legislative and normative documents.

According to Art. 4, sub-para. c of para. 4 of Law No. 7381, it is obligatory to obtain authorization certificate from the NDK for

personnel to take part in the activities determined by the NDK regarding the activities within the scope of this Law.

In addition, according to Art. 26 of the Regulation on Authorizations Regarding Nuclear Facilities (2023), monitoring and control plans or programs for the operation process regarding issues such as fuel and core management, operation experience, surveillance and internal audit, safety performance and human factors must be submitted to NDK in the annex of the operating license application for NPPs.

The regulations deal with human factors and some organizational aspects, as well as the authorization of operating personnel, are Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022) and Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022). Main provisions concerning leadership for safety, human factors and safety culture are presented in the Art. 6 and 7 of the Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022).

In the Akkuyu Project Agreement training of the staff is mentioned as “the parties shall cooperate in regard to: training and retraining of operating personnel of the NPP, the development and use of technical training facilities, including simulators, for training of personnel of the NPP”.

12.2 METHODS AND PROGRAMMES OF THE LICENCE HOLDER

Russian normative documents and standards used in Akkuyu NPP Project require human factor to be accounted for during NPP lifetime, including design stage. One of the Russian norms and rules, which is also among the Licensing Basis for Akkuyu is “General regulations on ensuring safety of nuclear power plants, NP-001-15”.

Relevant provisions are given in the following:

- The design shall provide for the possibility to exclude personnel single errors and mitigate their consequences,
- In the design of NPP and reactor plant systems (elements) priority shall be given to systems (elements) design of which has been based on the passive principle of action and inherent safety features (self-control, thermal inertia and other natural processes), as well as on the safe failure principle,
- In the design of the control rooms problems of man-machine interface shall be solved. The NPP parameters to be controlled shall be so selected and displayed as to provide personnel with unambiguous information indicating that NPP safe operating limits and conditions are observed, and identification and diagnostics of automatic response and functioning of safety systems are possible,
- NPP shall be staffed with personnel having the necessary qualification and admitted to independent work in the established order prior to delivery of nuclear fuel to the plant. Simulators have to be used for operation personal training before commence of unit operation. Professional training of the NPP personnel for exercising. Practical actions of the NPP operation shall involve technical means including simulators of various types, permitted for application in training NPP personnel. Particular attention shall be paid to exercising actions on probable disturbances, including accidents, in NPP operation and consideration of operating experience.

12.3 SELF-ASSESSMENT OF MANAGERIAL AND ORGANIZATIONAL ISSUES BY THE OPERATOR

The systematic self-assessment of senior managers and management at all other levels in the Akkuyu Nuclear JSC are integral part of the monitoring and review system in order to

identify achievements and address any degradation in the safety performance.

In addition, regarding human factors and safety culture, in the PSAR (Article 17 - Siting), it is stated that Akkuyu Nuclear JSC management carries out various functions aimed at systematic information distribution to all personnel and promotion of relevant values and attitudes as well as at conduct of well-timed training and briefings to provide for unified understanding of safety culture concept/meaning and provision of strict compliance with safety requirements. Also, for continuous safety culture enhancement and well-timed identification of any negative tendencies, the Akkuyu Nuclear JSC management will carry out continuous safety culture monitoring and periodical self-assessment within the organization over the entire life cycle of NPP.

12.4 ARRANGEMENTS FOR THE FEEDBACK OF EXPERIENCE

Arrangements for the feedback of experience in relation to human factors and organizational issues are discussed in Article 19 of the National Report.

12.5 REGULATORY REVIEW AND CONTROL ACTIVITIES

In terms of regulatory oversight of the human factors, some of the relevant regulations of the NDK are focused on the design of NPPs. Also, NDK's regulatory control is applied in

authorization process according to regulations and requirements specific to the relevant authorization with regard to human factors. Authorization activities include: Authorization of Nuclear Facilities, Approval of Manufacturers of Equipment Important to Nuclear Safety for Nuclear Facilities, Authorization of Independent Oversight Companies, Authorization of Operating Personnel in Nuclear Facilities. Regulatory control activities related to human factors and safety culture can also be carried out during the review and assessment or on-site examination stages of the aforementioned authorizations. Relevant review and assessment procedures or checklists are used in these activities.

Human factor and organizational issues; organizational structure, NPP personnel, responsibilities of managers, personnel subject to notification, personnel training and authorization of operating personnel are regulated by the Regulation on The Organizational Structure and Personnel in Nuclear Installations (2022).

The plans and programs related to human activities presented by the Owner/Operator within the scope of the operating license are subject to regulatory control under many headings such as Management System, Leadership and Management for Safety, Human Factors Engineering (HFE), Human-Machine Interface, Operating Experience, Personnel Qualifications, Human Reliability and Monitoring of Human Performance.

13 QUALITY ASSURANCE (ARTICLE 13)

Each Contracting Party shall take the appropriate steps to ensure that quality assurance programmes are established and implemented with a view to providing confidence that specified requirements for all activities important to nuclear safety are satisfied throughout the life of a nuclear installation.

13.1 REGULATORY REQUIREMENTS FOR QUALITY MANAGEMENT

NDK gives highest priority to safety during the licensing of all nuclear facilities. NDK's regulatory activities are in parallel with IAEA directives, requirements, guides and principles. In accordance with the para. 1 of the Art. 5 of Law No. 7381, authorized legal persons shall, within the framework of the conditions of the authorization granted and bearing all responsibilities, carry out its activities with an appropriate management system and keep the records, make notifications and reporting as defined in legislation and management system. According to the Regulation on Authorizations Regarding Nuclear Facilities (2023), the Licensee submits management system documents containing matters related to general quality assurance to the NDK. NDK, then, reviews and assesses quality assurance programs when implementing licensing process.

In parallel to IAEA document on this issue, GSR Part 2 – Leadership and Management for Nuclear Safety, aspects related to the management system that Licensees will establish within their own facilities, prioritizing safety and supporting a safety culture, are regulated by the Regulation on the Management System for Nuclear Facilities, Radiation Facilities, and Radioactive Waste Facilities (2022).

Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022) includes basic principles and specific requirements such as responsibilities of the Owner/Operator and top management, leadership for safety, safety culture, management system, managerial processes, safety-related processes, quality

assurance and management This Regulations also defines the minimum documents which should be included in the management system of a nuclear facility.

With this Regulation, requirements have been set for implementation, maintaining, evaluating and continuously improving of a management system for Owner/Operators that construct, operate, decommission or close a nuclear facility. The Owner/Operator is obliged to establish a management system to carry out all its activities that prioritizes safety and supports safety culture. The Owner/Operator's management system has to integrate safety, security, environment, health and quality elements and individual, social and economic factors without compromising safety. In addition, the Regulation sets out requirements for issues such as quality assurance, configuration management and supply management.

According to the Regulation on Authorizations Regarding Nuclear Facilities (2023), the regulatory documents to be used as the basis for authorization processes for nuclear facility activities are determined by the NDK through the RDL.

Together with the Regulation on the Management System for Nuclear Facilities, Radiation Facilities, and Radioactive Waste Facilities (2022), the approved RDL for Akkuyu NPP includes the IAEA's "Leadership and Management for Safety, Serial No. GS-R Part 2" and Russian Federations regulations and guides regarding the management system and quality assurance for NPPs.

13.2 INTEGRATED MANAGEMENT SYSTEM OF THE AKKUYU NUCLEAR JSC

Akkuyu Nuclear JSC has established an integrated management system in order to carry out activities for construction and operation of the Akkuyu NPP in a system focused on safety and quality, and also applies, maintains, evaluates and continuously improves the integrated management system.

The following Akkuyu Nuclear JSC management systems are integrated into the Integrated Management System, Quality Management System, Environmental Management System and Occupational Health and Safety Management System.

The integrated management system has been developed in accordance with requirements of IAEA, international standards ISO 9001:2015, ISO 14001:2015, ISO 19443:2018, ISO 45001:2018 and Regulation on the Management System for Nuclear Facilities, Radiation Facilities, and Radioactive Waste Facilities (2022). The integrated management system covers all processes, systems and elements, documentation, activities and services that affect safety of the Akkuyu NPP and quality of services, goods and activities provided.

The purpose of establishing, implementing, functioning and developing the integrated management system is to ensure effective functioning of processes, their continuous improvement and creation of opportunities to increase customer satisfaction, taking into account applicable legislative and regulatory requirements.

Safety is the fundamental principle on which the integrated management system is based.

The integrated management system ensures maintaining and improvement of safety by planning and monitoring of the processes functioning, activities related to safety and affecting safety, as well as monitoring

functioning of processes and activities at all stages of Akkuyu NPP life cycle.

The Akkuyu Nuclear JSC's integrated management system contributes to:

- the formation and maintaining of a strong safety culture;
- continuous improvement of the Akkuyu Nuclear JSC's processes and activities;
- management of development and changes;
- improving the efficiency and effectiveness of the Akkuyu Nuclear JSC's activities;
- creation, maintenance and development of effective internal and external communications as well as effective and efficient management of the Akkuyu Nuclear JSC.

The Akkuyu Nuclear JSC's quality management system ensures implementation of the Quality Policy and is aimed at achieving the Akkuyu Nuclear JSC's goals, taking into account assuring the required level of quality at all stages of Akkuyu NPP life cycle.

Environmental Management System assures implementation of the Environmental Protection Policy. It is aimed at achieving the Akkuyu Nuclear JSC's goals to reduce impact to the Akkuyu Nuclear JSC's activities and contractors involved in the construction of the Akkuyu NPP on environment, improving the environmental safety of the Akkuyu NPP at all stages of its life cycle, protection from emergencies in accordance with the requirements of legal acts as well as regulatory documents and recommendations of international organizations.

Occupational Health and Safety Management System ensures implementation of the Occupational Health and Safety Policy and is aimed at reducing impact of hazardous and harmful production factors and associated risks at workers' workplaces, and improving safety culture of production. In 2023, the international

certification body for management systems, Kalitest recognized that the Akkuyu Nuclear JSC's integrated management system meets the requirements of ISO 9001:2015, ISO 14001:2015, ISO 19443:2018, ISO 45001:2018 standards and issued the Akkuyu Nuclear JSC Certificates of Conformity with a validity period until the end of 2026.

In accordance with requirements of the NDK and ISO standards, the Akkuyu Nuclear JSC has developed and put into effect the "Integrated Management System Manual", which defines the Vision, Mission and Values of the Akkuyu Nuclear JSC, describes goals, principles and specific approaches for organization and functioning of integrated management system, a decision-making mechanism that provides priority of safety and achievement of the Akkuyu Nuclear JSC's goals, organizational and managerial measures aimed at ensuring safety, quality and a high safety culture at all stages of the Akkuyu NPP life cycle.

Based on process approach, the Integrated Management System Manual defines a set of interrelated and manageable processes, consisting of the main processes, security processes, management processes and supporting processes. In addition to this, the owners of the processes, their responsibilities, as well as the requirements of stakeholders, are also defined.

To coordinate activities on functioning and development of the integrated management system, including nuclear safety and quality assurance issues, Chief Executive Officer of the Akkuyu Nuclear JSC under construction has been appointed as a Senior Management Representative on integrated management system. The functions, responsibilities, duties and powers of a Senior Management Representative on the integrated management system are defined in the internal documents of Akkuyu Nuclear JSC.

To ensure a high level of safety and quality, the principle of using a differentiated approach is

laid down in the integrated management system, in which the application of safety requirements to processes and activities, products and services is established in accordance with the degree, probability and scale of possible radiation effects from the process, type of activity, service provided.

Decision-making on the functioning and development of the integrated management system and its individual elements and processes is based on use of a risk-based approach, principle of responsibility and leadership of the Akkuyu Nuclear JSC's management, which provides a strong safety culture in the Akkuyu Nuclear JSC.

The formation and maintaining of a strong safety culture are carried out by:

- ensuring priority of safety at all activities and processes of the Akkuyu Nuclear JSC when making any decisions;
- ensuring a common understanding of safety culture principles by all employees and managers, as well as suppliers and contractors;
- awareness of all employees about dangers and radiation risks of their activities;
- ensuring such conditions under which employees safely perform official functions, taking into account interaction of human, technological, organizational factors;
- ensuring an atmosphere of trust and the principle of "not accusations" at all levels of management;
- understanding by each manager and employee of the inadmissibility of hiding mistakes in their activity, the need to identify and eliminate the causes of their occurrence;
- full regulation of all activities.

The effectiveness of the integrated management system is ensured by the order of relations between interacting elements of the integrated management system, which is determined by

the organizational chart and becomes the most important regulator of their behaviour.

The organizational chart includes formulation of goals and objectives, definition of composition and location of departments, their resource provision (including the number of employees), development of regulatory procedures, documents, regulations that consolidate and regulate the forms, methods and processes that are carried out in the integrated management system.

Development and improvement of the integrated management system is ensured by a continuous analysis of the organizational chart functioning in order to make timely changes and adjustments to the organizational structure of the Akkuyu Nuclear JSC. Improving the organizational chart includes clarifying the functions of departments, defining the rights and responsibilities of managers and employees in internal documents of Akkuyu Nuclear JSC which includes matrices of authority, eliminating multi-stages, duplication of functions and information flows.

To determine and separate areas of responsibility when monitoring activity and assessing the compliance of activity performed with established criteria, the integrated management system uses the principle of activities split (by functional characteristics and management levels), determining and accounting for the ratio of responsibility and authority, delegation of authority, centralization and decentralization of management, responsibility and supervision.

The Akkuyu Nuclear JSC provides systematic identification of indicators, monitoring and evaluation of the integrated management system to confirm its effectiveness and efficiency, as well as to identify areas requiring improvement. For these purposes, the following various types of monitoring and evaluation are used:

- monitoring the activities of managers, monitoring /measuring processes,

including self-assessment and independent evaluation;

- internal and external audits, as well as conducting an analysis based on the results of assessments. The corresponding processes are defined in the integrated management system for these actions.

Procedures have been developed and implemented to define requirements for planning and conducting audits and self-assessment. The Akkuyu Nuclear JSC conducts internal audits of the integrated management system to assess the effectiveness of processes and the integrated management system overall.

The overall purpose of internal audits is to analyse the current state of the integrated management system, determine the need for improvements and develop corrective actions if necessary.

Internal audit of processes is carried out on the basis of relevant approved schedule and audit plans.

The integrated management system defines processes to ensure safety and reliability. The processes are designed to manage various aspects of safety, including nuclear, radiation, technical and industrial, fire, information, environmental, physical safety, as well as health and labour safety.

Monitoring of physical configuration compliance with Akkuyu NPP Project requirements and the content of the Project, as well as establishing and maintaining of the Akkuyu NPP Project framework throughout the life cycle of the Akkuyu NPP, ensuring unified approach to decision-making, and assessing impact of these decisions on future Akkuyu NPP Project changes and safety, is carried out in accordance with the configuration management activities. For these actions, the integrated management system defines the "Configuration Management" process, main purpose of which is to provide timely information that reflects the actual physical and

operational characteristics of Akkuyu NPP, and contributes to the adoption of safe, competent and cost-effective decisions taking into account safety.

The documentation of the integrated management system establishes general approaches, requirements, principles of the Akkuyu Nuclear JSC's processes and activities, and measures to ensure safety and quality. To manage the Akkuyu Nuclear JSC's documentation, ensure the quality and relevance of the documents used, "Documentation Support" process functions. The documentation of the integrated management system is structured according to a hierarchical principle. During operation of the integrated management system, numerous records are made recording results of the Akkuyu Nuclear JSC's activities and functioning of the integrated management system. Document flow control and keeping of documents for the Akkuyu Nuclear JSC's activities and processes, functioning of the integrated management system, as well as the establishing of general requirements for inspecting, accounting, keeping, identification, withdrawal from circulation of records is carried out in accordance with procedures approved by the management of the Akkuyu Nuclear JSC.

The integrated management system defines principles of the relationship between various participants of the Akkuyu NPP construction Project, namely:

- All activities on the Akkuyu NPP Project are carried out on the basis of contracts, which clearly indicate the scope of activities, responsibilities, and quality requirements;
- Each participant of the Akkuyu NPP Project should develop and implement its quality management system;
- The Akkuyu Nuclear JSC develops General Quality Assurance Program (QAP), in which it establishes a set of organizational and technical quality

assurance measures affecting safety of Akkuyu NPP;

- Each Akkuyu NPP Project participant develops an individual Quality Assurance Program based on the General QAP, which ensures Akkuyu NPP management confidence that all participants performing activities and providing services to the Akkuyu Nuclear JSC ensure safety and quality, taking into account differentiated approach that takes into account classification of systems (elements), buildings and structures of the Akkuyu NPP according to degree of their impact on security.

Sufficiency of guarantees to assure proper quality of supplied equipment and services is confirmed by external audits.

Following General QAP, the Akkuyu Nuclear JSC provides systematic measurement and monitoring of suppliers' management system and contractors' quality management systems in order to determine ability of the suppliers and contractors to deliver processes, products and services that meet the requirements of regulatory documents the Akkuyu Nuclear JSC and the terms of contracts.

When conducting external audits, the Akkuyu Nuclear JSC verifies compliance of suppliers and contractors with the Akkuyu Nuclear JSC's requirements set out in contracts and suppliers' quality assurance programs.

Evaluation and selection of suppliers and contractors is carried out on a competitive basis, taking into account objective evidence of their ability to fulfil their contractual obligations, including compliance with management system requirements, in accordance with the Akkuyu Nuclear JSC's procurement documents.

The Akkuyu Nuclear JSC has a procurement Committee designated to evaluate contracts and technical information submitted to tender and to make decisions. Additionally, there is a

special procedure for preliminary evaluation of potential suppliers.

For continuous improvement and development of the integrated management system, systematic monitoring of its functioning and evaluation of effectiveness is carried out. To monitor and evaluate the effectiveness of processes, process indicators are defined for each process.

In order to continuously improve and develop the integrated management system, an annual analysis of the integrated management system functioning is carried out.

One of the methods of the integrated management system effectiveness general analysis is self-assessment method. Self-assessment involves an assessment of the entire integrated management system and, first of all, an assessment of ensuring safety and quality, achieving and maintaining a high safety culture. The results of self-assessment are documented, kept and used as input data for analysis by the Akkuyu Nuclear JSC's Top Management to continuously improve the integrated management system.

To determine effectiveness of the integrated management system, regular independent assessments are carried out, including an audit at all levels, the functions performed at each level and the determination of the effectiveness of processes.

To assess the compliance of the integrated management system functioning and its individual processes with requirements and to assess its effectiveness and efficiency, periodic audits of the integrated management system are implemented.

In order to maintain the required level of activities quality and ensure safety in the Akkuyu Nuclear JSC, according to the results of inspecting, analysing of non-conformities revealed, the non-conformities are managed and corrective actions are implemented for mitigation and prevent recurrence of non-conformities. All identified non-conformities

are evaluated in terms of their impact on safety, and actions are taken to eliminate non-conformities and causes of non-conformities in the future. When investigating non-conformities, the causes of their occurrence are determined. Investigation materials are used as input data for development of corrective actions.

In order to implement principle of continuous improvement of the integrated management system functioning in the Akkuyu Nuclear JSC, corrective and preventive actions are managed in accordance with documented procedures.

In order to implement principle of the Akkuyu Nuclear JSC's integrated management system functioning continuous improvement, corrective and preventive actions are managed in accordance with documented procedures.

Management of non-conformities, corrective and preventive actions is carried out using an automated quality management information system.

The top management of the Akkuyu Nuclear JSC annually conducts overall analysis of the integrated management system in order to ensure its continued suitability, adequacy, effectiveness and consistency with the strategic direction for implementation of the Akkuyu Nuclear JSC's policies and goals, as well as the application of lessons learned from internal and external experience to improve the functioning of the integrated management system.

All activities related to the assessment, self-assessment, audits and analysis of the integrated management system are regulated in the integrated management system documentation and approved by the Akkuyu Nuclear JSC's management.

13.3 INTEGRATED MANAGEMENT SYSTEM OF SINOP NPP AND KIYIKÖY NPP

TÜNAŞ has established a process-oriented integrated management system that consolidates all management systems,

processes, and daily operational practices into a single, comprehensive, and coherent framework. The integrated management system has been developed in accordance with the applicable legislation of the NDK, particularly the Regulation on Management Systems in Nuclear Installations, Radiation Facilities, and Radioactive Waste Facilities (2022). It also incorporates the requirements of the IAEA, especially GSR Part 2 “Leadership and Management for Safety”.

The integrated management system ensures that all activities carried out by TÜNAŞ, across the site selection, design, construction, commissioning, operation, and decommissioning phases of the Sinop and Kıyıköy NPP project, are systematically planned and executed in alignment with TÜNAŞ’s unified goals and objectives. The system integrates various domains, including health, safety, environment, security, quality, and financial management, within a single structure. It is supported by a hierarchy of documentation, comprising policies, the Management System Manual, defined processes, procedures, guides, and instructions. The Management System Manual comprehensively describes TÜNAŞ’s organizational structure, the design of the integrated management system, and the distribution of roles and responsibilities. TÜNAŞ’s integrated management system is subject to continuous improvement to remain aligned with evolving regulatory requirements.

13.4 REGULATORY REVIEW AND CONTROL

According to Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022), the management system is documented in a systematic manner in accordance with the provisions of the Regulation. Management system documents are prepared in a useful and legible manner, checked and approved by the authorities of the organization in accordance with the relevant procedure. The organization

puts the management system documents into practice after passing through the internal approval process.

The management system to be established and implemented by the organizations, management system documents and important changes in terms of safety to be made in the system are subject to the NDK's review and assessment and inspections. Provisions in the relevant regulation of NDK are applied in matters related to inspections on management system of organizations.

The organization shall submit to the NDK the documents demonstrating that its approved management system complies with the provisions of the Regulation. Additionally, the results of the self-assessments, independent assessments and management reviews regarding the management system of the organization are submitted to the NDK within three months following the realization of these activities.

In order to ensure safety in activities related to the facility, systematic measures applied in activities affecting safety and institutional and technical arrangements are recorded with general quality assurance document and activity-specific quality assurance documents, developed for different types of activities, such as siting, manufacturing, construction, commissioning, operation and decommissioning. The general quality assurance document includes measures and regulations applicable to all activities.

The organization corrects the any deficiencies determined in the management system documents based on the NDK's reviews and assessments, within the period deemed appropriate by the NDK.

Administrative sanctions are imposed if it is determined that there is a violation of the relevant legislation or authorization conditions, the decisions and instructions of the NDK.

In addition to the oversight of applicants/licenseses over their vendors, NDK’s

regulatory control is also applied to those vendors.

The manufacturers of equipment important to nuclear safety for nuclear facilities to be built in Türkiye is subject to authorization and inspections by the NDK in accordance with the

Regulation on the Supply Chain in Nuclear Facilities (2024).

During the authorization process for manufacturers, NDK seeks an established quality management system in the manufacturers' organization and facilities.

14 ASSESSMENT AND VERIFICATION OF SAFETY (ARTICLE 14)

Each Contracting Party shall take the appropriate steps to ensure that:

- i. comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation and throughout its life. Such assessments shall be well documented, subsequently updated in the light of operating experience and significant new safety information, and reviewed under the authority of the regulatory body;*
- ii. verification by analysis, surveillance, testing and inspection is carried out to ensure that the physical state and the operation of a nuclear installation continue to be in accordance with its design, applicable national safety requirements, and operational limits and conditions.*

New regulatory framework has been established in 2018 together with transition to new governmental system and this framework has been also updated in 2022 in the level of law. Law No. 7381 defines NDK as the new regulatory authority and makes authorization for any activities within the scope of this Law obligatory and states that license from the NDK is needed to operate any nuclear facility. In this context, the applicants for authorization are obliged to provide all the information and documents in the required format and content requested by the NDK.

Even though many regulations have already been replaced, the legislative transition is still ongoing. A few older regulations remain in force until fully replaced by new ones developed in accordance with Law No. 7381. The Decree on Licensing of Nuclear Installations (1983) has been repealed, and the Regulation on Authorizations Regarding Nuclear Facilities (2023) now serves as the core legal framework regarding licensing activities.

This Regulation defines the main steps of licensing with required format and content of application documents for regulatory review.

According to the Regulation, licensing process begins with the “Letter of Intent” which involves initial communication to understand the applicant's technical potential and financial capabilities. Along with this, the regulation defines that activities such as site preparation, construction, commissioning, operation, modification, and decommissioning of nuclear facilities require authorization. An organisation

must submit a formal application to the NDK along with a comprehensive application file. The application file includes documents related to safety, security, technical capability, organizational structure and any additional documentation requested by the NDK in accordance with the requirements of the relevant authorization stage.

The general procedures for review and assessment of NDK are laid out in the Regulation. According to this general process, NDK may request further information related to safety for review and assessment at any stage whenever it deemed necessary. The application documents are reviewed and assessed by NDK.

The purpose of the review and assessment by NDK is to determine whether if the applicant has demonstrated that the safety in all stages of facility's lifetime such as the design and operation meeting the related safety requirements by the proposed design in its reports. Details of the licensing process and review and assessment activity are regulated by internal guidelines. Main internal document in this subject is the Directive on Establishment and Implementation of Licensing Projects. This directive provides provisions on the mechanism to establish and implement licensing activities for nuclear installations under project management approach. The directive envisages two main processes to follow: Review and Assessment, and Inspections. Both topics are also regulated by two internal directives within NDK.

According to directive on review and assessment process for nuclear installations are performed in different levels:

1. Level 1 R&A is implemented mainly to check the adequacy of the application; and format and content of the documents submitted with the application,
2. Level 2 R&A is broad review and assessment and implemented mainly to check the suitability of the information provided in the documents for independent assessment; consistency of the information provided; and compliance with the regulations,
3. Level 3 R&A is detailed review and assessment and implemented mainly to check if the SSCs are classified adequately in terms of safety and quality classes; if their technical specifications, their environmental qualification and their safety functions are properly addressed and in conformity with the relevant codes and standards; and to check if the accident analyses are performed using adequate method and tools; if assumptions and inputs are suitable; if the results are in conformity with the regulations and acceptance criteria. Also, this level includes independent verification of some of the accident analyses if deemed necessary.

The review and assessment process are always supported by regulatory inspections at any stage of licensing and throughout the lifespan of a nuclear installation.

14.1 SITE APPROVAL

Site approval is a regulatory decision that confirms the site has no characteristics hindering nuclear facility establishment. It is granted based on a comprehensive review of the site report submitted by the applicant, which must include:

1. Evaluation of natural and human-induced external events and the feasibility of implementing protective measures,
2. Applicability of emergency response measures,
3. Potential dispersion of radioactive releases.

The approval remains valid for 10 years, provided that the next stage of licensing is initiated within that timeframe. For safety-insignificant structures and activities such as ground investigations or non-nuclear buildings, work must be carried out under the supervision of qualified IOC (Independent Oversight Company).

14.2 SITE PREPARATION PERMIT

Prior to commencing site preparation activities, the applicant must obtain a site preparation permit from the NDK. The application must be submitted with the following documents:

1. Relevant sections of the SAR that address site features, plant layout, and classification of SSCs,
2. Program for site preparation activities,
3. Management system documentation ensuring quality during the site preparation phase,
4. Monitoring program for site parameters,
5. Construction security plan addressing site-specific hazards and security concerns.

The NDK reviews:

1. The adequacy and correctness of SSC classification criteria,
2. The feasibility and scope of proposed preparation activities,
3. Overall compliance with the licensing basis documents in the RDL.

The site's geography, topography, population projections, natural and man-made hazards, and interactions between multiple facilities on a

common site are all considered in the evaluation.

14.3 MANUFACTURING PERMIT

Prior to initiating the manufacturing of any equipment important to safety, the Owner/operator must obtain a Manufacturing Permit from the NDK. The application for this permit must include the following documentation:

1. Management system documentation ensuring quality assurance during manufacturing,
2. Criteria and procedures for the selection and approval of manufacturers,
3. A detailed list of equipment important to safety to be manufactured,
4. A proposed manufacturing schedule.

Before the manufacturing of equipment begins, the organisation must notify the NDK and submit:

1. Information on the designated manufacturer(s),
2. Relevant documentation forming the basis of IOC's conformity assessment,
3. Conformity assessment report prepared by the IOC,
4. Approved quality plans for the manufacturing process.

NDK identifies a list of equipment subject to its consent based on their safety functions with a graded approach. Particularly that equipment that serve as barriers against the release of radioactive materials, ensure cooling of radioactive substances or associated barriers, or terminate the nuclear chain reaction are included in the list. The list is included in the licensing conditions and may be revised before manufacturing begins.

NDK performs regulatory oversight by reviewing submitted manufacturing documentation and conformity assessment reports, assessing equipment design documents to verify that safety functions are adequately

met, and evaluating the accreditation documentation validity.

For commercial grade items, the organisation is required to perform internal verification for compliance with the RDL, technical requirements, and applicable standards. IOCs must then perform conformity assessments before procurement.

14.4 CONSTRUCTION PERMIT

The construction process for nuclear installations includes the construction of structures important to safety, temporary on-site storage of equipment, installation of equipment, and assembly of systems. These activities must be conducted under the supervision of IOCs. All works must comply with approved quality plans and implementation-level project documents.

For multi-unit NPPs, structures important to safety serving more than one unit are addressed under the authorization of the first unit.

For nuclear facilities involving reactors, fuel production, or reprocessing, the license holder is required to obtain an independent safety assessment report from a technically qualified organization that is independent of the designer or SAR compiler. This report must verify the accuracy and adequacy of the applicant's safety analyses and evaluations.

The Owner/operator authorized for the construction stage is permitted to:

1. Construct structures important to safety, perform equipment installation, and assemble systems,
2. Submit IOC conformity assessment reports and construction quality plans at least 20 business days before starting foundation excavation, ground improvement, or construction of structures important to safety,
3. Submit quality plans for the transport, temporary storage, protection, inspection, and final installation of equipment subject to regulatory

opinion at least 20 business days prior to commencement,

4. Submit quality plans related to the installation of systems important to safety at least 20 business days in advance of the respective activities.

A construction license must be obtained before beginning the construction of structures important to safety. The application must include the following documents:

1. SAR
2. Level 1 and Level 2 PSA reports,
3. Construction program,
4. Management system documentation ensuring quality assurance during construction,
5. Independent safety assessment report,
6. Training program for personnel (required for the first unit only),
7. Environmental radiation monitoring program (required for the first unit only).

NDK may request additional documentation based on the characteristics of the facility and safety considerations.

The SAR is reviewed to determine whether:

1. Structures important to safety have the technical capacity to fulfil their safety functions,
2. Systems can perform their intended safety functions,
3. The list and classification of initiating events for design basis accidents and design extension conditions are sufficient, consistent, and the respective scenarios are appropriate,
4. The methods, tools, and software used for analysis are appropriate and validated,
5. The adequacy of the design in terms of safety has been demonstrated by evaluating the results of the analyses.
6. The design extension conditions have been taken into account in the design.

The independent safety assessment report findings are also taken into account during this review.

During construction, regulatory inspections are used to ensure that the installation is built as designed.

14.5 COMMISSIONING PERMIT

The commissioning phase covers testing activities related to SSCs important to safety, as well as the integrated facility, prior to the loading of nuclear fuel. These tests confirm that the SSCs function as designed under both cold and hot conditions. The organisation is required to contract IOCs, to oversee commissioning activities. All tests must follow approved procedures and programs under IOC supervision. In certain justified cases, the NDK may allow early commissioning of specific SSCs before the overall commissioning authorization, if their use is necessary for preparatory activities, such as fresh fuel storage building.

When the organisation obtains the commissioning permit, it is able to:

1. Conduct cold and hot functional testing of SSCs and the facility,
2. Submit test records to the NDK,
3. Demonstrate that installed SSCs perform their intended safety functions under design conditions, supported by analysis where needed,
4. Establish the operational organization, completing staff recruitment and training, and involving licensed personnel in the commissioning tests.

An application for commissioning permit should include:

1. The commissioning program,
2. Quality-related management system documentation,
3. Information on the operating organization and personnel,
4. The updated SAR,
5. Emergency preparedness plans,

6. Programs related to fire safety, physical protection, nuclear material control, radioactive waste and spent fuel management, radiation protection, maintenance, ageing management, environmental qualification and similar programs.

NDK reviews:

1. The adequacy and appropriateness of the commissioning program and management system,
2. The readiness and qualification of the operational organization and staff,
3. Inspection outcomes from the manufacturing and construction phases,
4. Whether updates to the SAR require additional safety analyses,
5. The consistency of submitted plans with the RDL and national requirements.

Reviews of certain plans and programs, such as emergency preparedness or ageing management, may continue subsequent to the issuance of the commissioning permit.

14.6 OPERATING LICENSE

According to the national regulatory framework, the operation of an NPP formally begins with the introduction of fresh nuclear fuel into the reactor core. The applicant is required to submit a comprehensive application package for the operating licence, which includes the following documents:

1. The SAR reflecting the as-built status of the facility,
2. Procedures related to normal operation, anticipated operational occurrences, and accident conditions, including documents on severe accident management,
3. Monitoring and control plans or programmes concerning fuel and core management, operational experience,

internal audit and oversight, safety performance, and human factors (required for the first unit only),

4. Updated versions of plans, programmes, procedures or reports previously submitted during earlier licensing phases.

NDK may request additional documents on the grounds of safety or security, taking into account the characteristics of the installation. The SAR is reviewed for consistency with the licensing basis and for updates. The submitted plans, programmes and procedures are evaluated for their adequacy and alignment with the RDL and intended purposes. In addition, the results of commissioning tests are taken into account in the evaluation of the operating licence application.

After the operating licence is granted, the licensee must complete the following commissioning stages, each serves as a hold point, before starting operation:

1. Initial fuel loading and associated tests,
2. First criticality and associated tests,
3. Initial power ascension and associated tests,
4. Full power operation and trial operation including performance tests.

The Owner/operator submits the approved work programme for each stage as part of the operating licence application.

The commissioning stages are conducted in accordance with the approved procedures and with the participation of operating personnel. NDK observes the tests and reviews the records of each test. Progression to the next stage is granted upon satisfactory evaluation of the test records and observer reports by the NDK.

Upon completion of all commissioning stages, the licensee finalizes the operating limits and conditions and submits them to the NDK. Following the approval of the operating limits and conditions, the operating licence is updated to include them, and the plant may begin

commercial operation in accordance with the granted licence.

An operating licence for a nuclear facility is issued only when the following conditions are met:

1. Demonstration of compliance with all relevant safety and security requirements by the applicant;
2. Fulfilment of nuclear liability insurance or guarantee obligations;
3. Confirmation by the Account Management Board on the adequacy of financial provisions for radioactive waste management and decommissioning.

Safety assessments are conducted continuously in all lifetime of the facilities. According to Law No. 7381, any authorized person should perform safety assessments at the frequency determined by the NDK. The organisation is required to conduct periodic safety assessments of SSCs of the facility in accordance with formats and contents defined by the NDK. These assessments are also to be carried out upon request, in line with national or international safety developments. The interval between two consecutive periodic safety reviews (PSRs) must not exceed ten years. For multi-unit plants, a single PSR report may cover multiple units if submitted within this timeframe. Where improvements are deemed necessary by the NDK, the organisation is obligated to propose measures and implementation schedules, which are then subject to regulatory review and approval.

The licensee shall clearly define various operational states of the facility and prepare detailed procedures for each operating condition. Internal audit mechanisms are to be established and maintained throughout the operating lifetime.

According to Art. 19 of the Regulation on Record, Notification and Reporting in Nuclear Installations (2024), the organisation is required to carry out PSR that includes the current status of the plant's SSCs, equipment

qualification and classification, ageing, deterministic and probabilistic safety assessments, hazard analysis, safety performance, feedback from operational experience, emergency preparedness, effectiveness of procedures, radiological impact, human factors, organizational structure, the management system and safety culture.

The PSR must also include an overall assessment of the continued safe operation of the installation, the compliance of operational documents and practices with the current regulatory requirements as outlined in the RDL, findings identified during the review, and the corrective and preventive actions taken or planned in response to those findings.

The PSR report is submitted to the NDK within the timeframe specified in the Regulation on Authorizations Regarding Nuclear Installations (2023). This review process plays a key role in ensuring that safety is maintained and continuously improved throughout the operation of the facility.

In case of scheduled refuelling outages at NPPs, the licensee shall submit a quality plan, including maintenance activities, at least 20 business days prior to shutdown. Following refuelling, operation may only resume upon the NDK's approval. For unscheduled outages not previously covered by operating procedures, a quality plan must be submitted together with notification to the NDK. The licensee is responsible for implementing any additional measures requested by the NDK during outages.

Any deviation from normal operation or any planned or unplanned shutdowns must be promptly reported to the NDK.

Akkuyu NPP design has been reviewed and assessed based on the RDL which includes Turkish legislation, IAEA safety requirements and vendor country regulations, standards and codes. In parallel to review and assessment of the NDK, during Unit 1's construction license authorization preliminary SAR was reviewed

by the UJV Rez a.s. from Czech Republic and during the construction license authorization of Unit 2, some chapters of preliminary SAR were reviewed by TÜV SÜD of Germany with respect to these regulations and IAEA safety requirements.

14.7 PERMIT FOR RESTART OPERATION

In accordance with Art. 40 of the Regulation on Authorizations Regarding Nuclear Installations (2023) and Art. 18 of the Regulation on Record, Notification and Reporting in Nuclear Installations (2024), Türkiye has established a formal process for regulatory control over the shutdown and subsequent restart of nuclear installations.

A licensee is required to notify the NDK in specific cases such as:

1. A shutdown of a unit for three months or more (or six months for other types of nuclear installations),
2. An unplanned shutdown due to approaching or exceeding a safety limit defined in the operational limits and conditions,
3. A shutdown resulting from findings of a PSR,
4. Occurrence of other conditions specified in the operating license.

In the event of a shutdown, the licensee is required to submit a Shutdown Report, in accordance with Art. 18 of the Regulation on Record, Notification and Reporting in Nuclear Installations (2024). The report shall include the following:

1. Reason for the shutdown,
2. If the shutdown is planned, the planned schedule and any changes to the plan,
3. Information on fuel change,
4. Inspection results on the status of fuel and control rods during fuel change,
5. Activities implemented within the scope of maintenance and repair,
6. Evaluation of findings and nonconformities detected during on-

site inspection and inspection activities carried out by the Operator and the NDK at the facility,

7. Radiation doses to which employees were exposed during the shutdown,
8. Evaluation of the management of chemical and radiochemical conditions,
9. Leakage test results of the shelter building, isolation valves and passages,
10. Planned shutdown schedule for the next reporting period of the facility.

To resume operation, the licensee must submit an application for restart permit together with an Operating Restart Report. This report must demonstrate that the plant, its systems, and its organization are in a state ready for safe operation. It should contain either:

1. A justification that no safety, security, or radiological protection concerns exist following a long-term shutdown; or
2. In the case of an unplanned shutdown, a detailed account of the event, corrective and preventive measures implemented, and the current state of the plant showing it can safely resume operation.

NDK reviews these reports and determines whether the installation can be restarted safely. If deemed acceptable, the restart is authorized within the framework of the operating license conditions.

14.8 MODIFICATION PERMIT

According to Art. 41 of the Regulation on Authorizations Regarding Nuclear Facilities (2023), a structured process has been established for the control, assessment and authorization of modifications in nuclear installations. This process ensures that any change which may affect nuclear safety is subject to regulatory oversight.

The operator is required to implement a record, change control and approval mechanism

covering modifications that occur after key licensing milestones, including:

1. After the construction permit is granted, the facility's layout, structural systems design and manufacturing methods,
2. After the process of manufacturing the equipment has started, the design and manufacturing methods of the equipment,
3. After the commissioning permit is given, the structure, systems and equipment of the facility,
4. After the facility's operational limits and conditions and operating procedures are deemed appropriate by the Authority, these documents,
5. After the operating license is granted, it establishes and implements a recording, control and approval mechanism for changes in the structure, systems and equipment of the facility.

Modifications related to structures not important to safety are approved by the Owner/Operator after obtaining approval from responsible design and construction organizations, and conformity assessment carried out by IOC for modifications subject to it.

Modifications related to SSCs important to safety but not subject to the consent of the NDK for manufacturing are approved by the Owner/Operator after obtaining approval from responsible design and construction organizations, and conformity assessment by IOC. This evaluation can be made for the modifications at the operation phase, by the unit of the operating organization responsible for facility configuration and monitoring of the changes.

The following situations for a modification to be applied to SSCs important to safety that are subject to the consent of the NDK for manufacturing are as follows;

1. If the modification is assessed not to affect safety or security, the procedure applicable to non-safety-related SSCs is considered sufficient. In this case, internal processes such as design approval, documentation, and conformity evaluation are applied, and no formal authorization from the NDK is required.
2. If the safety or security impact of the modification could not be clearly determined, the organisation is required to consult the NDK to clarify whether a regulatory approval is needed.
3. If the modification is assessed to affect safety or security, then the modification is subject to regulatory approval. In such cases, the organisation must formally apply to the NDK for a modification permit.

Permit applications must include documentation on the proposed modification, safety/security impact assessments, and conformity evaluations from IOC for SSCs. Additional documentation may be requested depending on facility characteristics.

All submitted materials are reviewed by NDK to determine the safety and security implications of the modification. Only after receiving a regulatory approval may the licensee proceed with the implementation of modifications important to safety.

14.9 DECOMMISSIONING PERMIT

Decommissioning process is regulated under Art. 42 of the Regulation on Authorizations Regarding Nuclear Installations (2023), which mandates a graded approach depending on the type and characteristics of the facility. The process is designed to ensure that all safety, security, radiation protection, and environmental requirements are met throughout the decommissioning activities. Before initiating decommissioning activities, the licensee must apply for a decommissioning permit from the NDK. The application must be

accompanied by a comprehensive set of documents that demonstrate the licensee's preparedness and the safety of the proposed decommissioning strategy. The applicant should submit following documents in accordance Art. 42 (2):

1. Report on the safety of decommissioning activities,
2. Program for the decommissioning process,
3. Management system documents containing rules related to quality assurance in the decommissioning process,
4. Radiation emergency plans,
5. Plans or programmes related to environmental radiological monitoring, fire safety, radiation protection, radioactive waste management, safety, or nuclear material inventory and control.

NDK may request additional documents or clarifications on the ground of safety and security, considering the characteristics of the facility and the complexity of the decommissioning.

14.10 RELEASE FROM THE REGULATORY CONTROL

Upon the completion of activities specified in the approved Decommissioning Programme, the licensee must apply to NDK, accompanied by a Report demonstrating that the nuclear facility and site meet the necessary conditions for release from the regulatory control. NDK

shall review the report submitted with the application to ensure that the site has been brought into compliance with the conditions for reuse. NDK also conducts inspections and measurements at the site to verify that the necessary conditions have been met. If the report and inspection results are deemed satisfactory, the facility and site, along with the Licensee, are removed from regulatory control. This decision terminates the licensee's responsibilities and authorizations related to the facility and its site.

14.11 IMPLEMENTATION OF VNDNS PRINCIPLES

Although there is no operating NPP in Türkiye currently, the regulatory body used the opportunity of licensing activities for the Akkuyu NPP to implement lessons learned after the Fukushima Daiichi Accident such as the VNDNS principles. During the review and assessment for site related design parameters approval, limited work permit and the construction license for the Unit 1 of Akkuyu NPP, the items mentioned in first principle of VNDNS are among the main focus. Measures taken by the designer are carefully investigated to comply with this principle. In this context, dry-site concept has been adopted for the Akkuyu Site in the siting stage and provisions for station blackout and early release frequency are still among the issues discussed with the Akkuyu Nuclear JSC for complying with the VNDNS.

15 RADIATION PROTECTION (ARTICLE 15)

Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be ex-posed to radiation doses which exceed prescribed national dose limits.

15.1 REGULATORY REQUIREMENTS

Law No. 7381 states that all the activities related to nuclear facilities should be authorized by NDK. The authorization procedure and the contents of the documents that should be submitted during authorization process are described in the Regulation on Authorization of Nuclear Facilities (2023). According to this regulation, the radiation protection program shall be submitted to NDK in the application of commissioning permit.

Regulation on Radiation Protection in Nuclear Facilities (2018) is the main regulation which governs the radiation protection aspects in NPPs. This regulation covers the requirements for the protection of the workers, the public and the environment from the harmful effects of ionizing radiation due to nuclear facilities for the phases of site assessment, design, construction, commissioning, operation, decommissioning, release of the site from regulatory control and the radiation emergencies.

This regulation covers the following topics:

- The fundamental obligations of the licensee of an NPP related to the radiation protection,
- The principles of radiation protection, including justification, optimization of protection and implementation of dose limits
- The content of the radiation protection program which should be prepared by the licensee,
- The main responsibilities of the radiation protection officers and radiation workers in NPPs,

- Classification of workplaces as controlled areas and supervised areas and their rules,
- Classification of radiation workers, radiation work permit,
- Personal protective equipment,
- Medical surveillance, special medical surveillance,
- Monitoring of radiation areas, personal monitoring, monitoring of releases,
- Calibration and maintenance,
- Trainings for radiation protection,
- Radiation protection of female workers, visitors, students, interns and outside workers,
- Radiation protection in emergency exposure and existing exposure situations.

Graded approach is required for implementation of the provisions given in the regulation based on the risk that nuclear facilities may pose to workers, public and the environment.

ALARA (as low as reasonably achievable) requirements related to all these topics are specified in the Regulation on Radiation Protection in Nuclear Facilities (2018). According to this regulation the licensee shall take all measures related to the safety and security of the radiation sources in NPPs and the activities related to these sources are licensed according to the current legislations on radiation safety.

Regulation on Radiation Protection in Nuclear Facilities (2018) states that the effective dose exposed to a worker shall not exceed an average of 20 milliSieverts (mSv) per year in any five years period, nor 50 mSv in any single year. In addition, the annual dose limits for extremities and skin, and lenses of the eyes are provided for the workers in the regulation. The guidance

values for restricting exposure of emergency workers are also given in the regulation.

The limit for the annual dose of an individual in the population, arising from the normal operation of an NPP, is set to 1 mSv in the regulation. As in workers, the annual dose limits for skin and lenses of the eyes are given in this regulation. Besides, the dose criteria to be used in authorization steps for estimation of public effective doses is provided for normal operation, deviations from normal operation, design basis accidents, design extension conditions and emergency planning zones.

Public dose constraints for each NPP shall be determined by NDK and dose constraints for workers are determined, monitored and controlled by the licensee according to the Regulation.

According to Regulation on Clearance and Release of Radioactive Materials (2023), release limits shall be determined by the authorized person for gaseous and liquid releases separately, based on optimization of radiation protection as well as dose constraints determined by NDK for the public (representative person) and are considered within the scope of operating limits and conditions of the plant. The regulation states that release limits of nuclear facilities shall be submitted to NDK with SAR in construction permit and operation license stages.

Final values are considered within the scope of operating limits and conditions of the plant. In addition to these, during normal operation of nuclear facilities, release limits shall not be exceeded for the radioactivity concentrations of gaseous, aerosol, or liquid releases to be given into the atmosphere based on Regulation on Clearance and Release of Radioactive Materials (2023) and Regulation on Radiation Protection in Nuclear Facilities (2018).

Both regulations state that the release of radioactive gases, aerosols and liquids from nuclear facilities and accidents with appropriate measurement systems shall be monitored by the authorized person during normal operation.

An environmental radiological monitoring program shall be carried out in the nuclear facilities in order to assess the doses that public may receive during normal operation and emergencies in a short period of time according to the both regulations. This program shall be submitted to NDK in construction, decommissioning or closure permit applications of nuclear facilities. The program, the suitability of which assessed by NDK, shall be updated and implemented, if deemed necessary, in all phases from the issuance of the construction permit to the release of the facility and the site from regulatory control. The authorized person is obliged to ensure; continuous monitoring and recording of dose rates in the environment and regular monitoring and recording radioactivity levels in air, water, soil, flora, sediment, food etc. in environmental radiological monitoring program.

The environmental radiological monitoring activity for the NPPs which are not located in the border of Republic of Türkiye but may have radiological impacts on the territory of Türkiye, i.e. in Iğdır province due to Metsamor NPP, is performed by NDK. The samples within the scope of environmental radiological monitoring activity are taken regularly and related measurements and analyses are conducted. The radioactivity levels in various environmental medias such as soil, air, water, food, vegetation, precipitation, deposition, bioindicators etc. are monitored. Besides, instantaneous gamma dose rates in air and two-month cumulative ambient air doses are also monitored. If any increase is detected above the investigation levels and operational intervention levels, the related investigation and intervention activities are performed by NDK.

It should also be noted that the regulations related to radiation protection and other regulations are under renewal process to meet the new requirements stipulated in the Law No. 7381 and PD No. 95.

15.2 OPERATIONAL CONTROL AND RADIATION PROTECTION PLAN FOR AKKUYU NPP

The Akkuyu Project Agreement defines the scope of responsibilities of Akkuyu Nuclear JSC for the project. The means and provisions for radiation protection are included within the scope of Akkuyu Nuclear JSC's responsibilities.

The measurements to estimate the existing natural radiation background have been performed and documented in the framework of Engineering Studies Program of the siting work. Background radiation and the doses which are to be incurred from the background radiation were presented in the EIA Report. Positive decision was made for the EIA Report at the end of 2014. This information is also given in the SPR of the Akkuyu NPP which was approved in 2017.

In April 2018 construction license of Akkuyu NPP Unit 1 was issued. Moreover, construction licenses of Unit 2 in August 2019, Unit 3 in November 2020 and Unit 4 in October 2021 were issued. A description of the radiation protection systems and relevant basic equipment is presented in the PSARs of these units of the Akkuyu NPP.

According to the PSAR, radiation protection is provided by the implementation of following provisions:

- The shielding for radiation protection at the plant will mainly be provided by radiation shielding for the reactor and through concrete walls and floors,
 - In the event of an accident, measures to prevent the dispersion of radioactive substances into the environment (such as double containment) will be considered in the design,
 - The fact that radioactive substances are generally located in closed loops will prevent the spread of these substances into the facility and the environment,
 - Radioactive leakages from the equipment will be detected through monitoring using the sampling methods,
 - Ventilation systems will be used to provide the necessary air exchange rate to keep the radioactivity concentration in the workplaces within the limits determined by the regulatory legislation,
 - Gas and aerosols will be passed through the air purification system and released to the atmosphere,
 - Radioactive waste management systems will be used,
 - Classification of workplaces will be performed,
 - On-site and off-site radiation monitoring will be performed.
- In addition to these, in accordance with the ALARA Principle, the related measures to be taken in order to minimize the personnel radiation doses to the lowest possible level are provided in PSAR.
- During the operation of the Akkuyu NPP Units, radiation monitoring of the units and the environment will be performed by the operating organization. The monitoring program will include source, environmental, individual monitoring and dose assessment as follows:
- Monitoring in the premises of the NPP (on-line monitoring, and radiation dose rate monitoring, control of releases, contamination control, dosimetry control); monitoring of the physical barriers,
 - Monitoring of gaseous releases and liquid discharges from the plant using the Automated System of Radiation Monitoring on site (source monitoring),
 - Environmental monitoring of the impact area during normal operation and accident (Environmental Automated Radiological Monitoring System and Environment radiation monitoring laboratory); environmental sampling for specific activity of radionuclides in contaminated air, soil, water, local ecosystems, foodstuffs and other possible pathways of public exposure.

The monitored values by Environmental Automated Radiological Monitoring System are also provided.

The activities that should be performed by radiation protection officers who have the main responsibility to carry out the activities related to the radiation protection are given in the Regulation on Radiation Protection in Nuclear Facilities (2018), whereas the main administrative responsibilities of the radiation protection officers are stated in the PSAR.

The Akkuyu Nuclear JSC is responsible for establishing a radiation protection program, which includes procedures aimed at systematically meeting the corresponding regulatory documents on radiation protection. In accordance with the Regulation on Authorizations Regarding Nuclear Facilities (2023), the Radiation Protection Programme was submitted to the NDK together with the SAR as part of the commissioning permit application, and is currently under the NDK's review and assessment process.

NPP management will carry out administrative activities such as ensuring adequate and competent manpower, implementing appropriate administrative management, establishing appropriate working procedures,

and periodically updating the documents related to these activities.

NDK also initiated an environmental radiological monitoring activity for Akkuyu NPP in 2025 with the purpose of regulatory control to obtain radiation background levels in environmental media. Samples are periodically taken to analyse for this activity from water, soil, air, food, feed, terrestrial and aquatic vegetation, precipitation, deposition, bioindicators etc. In addition, gamma dose rates in the air are closely and continuously monitored via stations belonging to Radiation Monitoring and Warning System Network (RADİSA) of Türkiye. Cumulative ambient air doses are controlled with passive dosimeters placed to the environmental monitoring zone around Akkuyu NPP.

Radiological impacts of the Sinop NPP for normal operating conditions and reference accident scenarios were analysed and incorporated in the EIA Report. These impacts were also considered by TÜNAŞ in the Site Report of Sinop NPP. The design of radiation protection systems and the detailed analysis will be provided in PSAR and SAR implementing ALARA Principle in accordance with the Turkish and International requirements.

16 EMERGENCY PREPAREDNESS (ARTICLE 16)

1. Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency. For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.

16.1 EMERGENCY PLANS AND PROGRAMMES

Basic legislative documents on emergency preparedness and response are listed below:

- Regulation on Disaster and Emergency Management Centers (2011),
- Regulation on Radiation Protection in Nuclear Facilities (2018),
- Regulation on Tasks Regarding Chemical, Biological, Radiological and Nuclear Threats and Hazards (2020),
- Regulation on Management of Radiation Emergencies (2023),
- Regulation on Disaster and Emergency Response Services (2022),
- Türkiye National Disaster Response Plan (NDRP) (2022),
- National Radiation Emergency Plan (NREP) (2019),
- Law No. 7381 (2022),
- PD No. 95 (2022),
- PD No. 4 (2018).

The authority to regulate on-site emergency preparedness and response (EPR) of operating organizations of regulated facilities or activities that could necessitate emergency response actions is given to the NDK by PD No. 95. According to PD No. 95, the on-site EPR

activities of the facilities and activities that are within the scope of the Law No. 7381 are regulated by the NDK, the off-site EPR activities are regulated by AFAD Presidency. Besides, PD No. 95 states that NDK regulates the management of radiation emergencies.

16.1.1 NATIONAL COORDINATING AUTHORITY FOR EMERGENCY PREPAREDNESS AND RESPONSE

AFAD Presidency is the coordinating authority assigned for all kinds of disasters and emergencies at all levels including large scale nuclear and radiological emergencies. AFAD Presidency is recognized as the competent authority by IAEA according to Convention on Early Notification of a Nuclear Accident and Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. Also, provincial Disaster and Emergency Directorates, affiliated with AFAD Presidency, are established within the body of governorship in all 81 provinces.

AFAD Presidency and other related stakeholders have specific centers called Disaster Management Centers for disaster and emergency management that have roles in emergency response according to the related regulations. Also, provincial Disaster and Emergency Directorates, affiliated with AFAD

Presidency, are established within the body of governorship in all 81 provinces. In case of a national-level response for the management of disasters and emergencies, all the responsible authorities take part in the Presidential AFAD Presidency Disaster Management Center to provide effective response, coordination, and collaboration.

Disaster and Emergency Council has been established in 2020 with PD No. 67 and the Council meetings are chaired by the Minister of Interior. It consists of the vice ministers of following ministries: Ministry of Family and Social Services, ÇŞİDB, ETKB, Ministry of Treasury and Finance, Ministry of Health, Ministry of Agriculture and Forestry and Ministry of Transportation and Infrastructure, and representatives of the following institutions and organizations: Türkiye Red Crescent, Boğaziçi University Kandilli Observatory and Earthquake Research Institute. If the Minister of Interior considers it necessary, representatives of other ministries, public institutions and organizations, universities, and non-governmental organizations and experts could be invited to the Council's meetings.

The Council assembles at least twice a year. In case of need, the Board may hold extraordinary meetings upon the call of the Minister of Interior.

16.1.2 NATIONAL REGULATORY BODY

NDK's mission as a regulatory body is to undertake regulatory and inspectorial activities. NDK is recognized as the "national warning point" and the "competent authority" by IAEA according to Convention on Early Notification of a Nuclear Accident and Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

NDK provides technical consultancy in case of major radiation emergencies within the AFAD Presidency Disaster Management Center under the new preparedness and response infrastructure which was established with the

foundation of AFAD Presidency. In this framework, NDK is one of the support solution partners of the Search and Rescue Disaster Group which has been established within the frame of NDRP.

RADİSA was established by NDK after Chernobyl accident throughout the country. Monitoring stations are densely deployed at locations close to national borders and around NPP sites (Mersin and Sinop). The number of the stations has currently reached to 239 (**Hata! Başvuru kaynağı bulunamadı.**7) by deploying more RADİSA stations around Akkuyu NPP.

Atmospheric dispersion calculation capabilities are also present (HySplit) in NDK and studies for adaptation of the decision support system JRODOS to Türkiye are in progress.

The responsibilities of NDK are:

- To establish measures to be taken during radiation emergencies, to establish the general criteria about limitation of contaminated food consumption, and establish operational intervention levels,
- To establish the necessities for the reporting and classification of radiation emergencies,
- To establish the acceptable dose levels of radiation workers during emergencies,
- To evaluate the nuclear, radiation, and waste facilities, to estimate the doses, to give the necessary advice to the Provincial Disaster and Emergency Directorates and Provincial AFAD Centers,
- To support the analysis of national Chemical, Biological, Radiological or Nuclear (CBRN) risk, to give the necessary information, documentation to the governorships,
- To establish or ensure the establishment of radiation early

warning systems, their monitoring, and evaluate the data,

- To evaluate the notifications and reports related to radiological and/or nuclear threats and hazards; and if the event occurs, to inform the relevant governorship, ministries etc.,
- To provide informative support to the first responders related to radiological emergencies,

- To ensure the contact point function related to radiological emergencies within the concept of international agreements and organizations; to notify the relevant organizations for necessary precautions and coordinate information exchange.



Figure 7 - Measuring Stations of the National Radiation Monitoring Network

16.1.3 NATIONAL EMERGENCY PLANNING FRAMEWORK

In terms of emergency/disaster response, the roles and responsibilities of ministries, related institutions, and governorships are defined in related legislation and in NDRP which was issued in 2014. The NDRP is the highest-level overarching plan and can be executed for all types of emergencies and disasters.

The objectives of NDRP are as follows:

- To save lives,
- To return the interrupted life and activities to normal as soon as possible,
- To carry out the intervention works quickly and in a planned manner,
- To protect and maintain public health,

- To protect property, environment and cultural heritage,
- To reduce economic and social loss,
- To prevent secondary disasters or to reduce their effects,
- To ensure the effective use of resources.

25 disaster groups are defined in NDRP and each working group is dedicated to a specific service which may be required in case of emergencies. The roles and responsibilities of the disaster groups are defined in NDRP and each working group has a main solution partner (which are generally ministries or AFAD Presidency) and supporting solution partners (ministries, governmental institutions, non-governmental organizations).

In terms of emergency/disaster response, the roles and responsibilities of ministries, related institutions and governorships are defined in related legislation and in NDRP. The organization of the working groups that have roles in emergency preparedness and response are determined in the NDRP which corresponds to the highest-level all-hazards plan. The integrated planning infrastructure has been established in NDRP. According to this infrastructure, there are national working groups' plans (such as Search and Rescue Disaster Group, Health Working Group etc.) under the NDRP. The provincial disaster response plans and local working groups' operation plans are also present in this framework. The specific types of hazards and threats such as radiation emergencies are planned within the framework of national and local event-type plans.

NREP is an event-type plan according to the NDRP.

NREP was prepared by NDK and AFAD Presidency based upon the Regulation on Disaster and Emergency Response Services, Regulation on Tasks Regarding Chemical, Biological, Radiological and Nuclear Threats and Hazards, and NDRP. The roles of ministries, institutions and working groups set forth in the legislation are elaborated in NREP in terms of radiation emergencies. The emergency plans to be taken into consideration in case of radiation emergencies are given in NREP by taking into account the integrated planning structure present in NDRP (**Hata! Başvuru kaynağı bulunamadı.8**).

The most recent approach of the IAEA on emergency preparedness and response was adopted, and lessons learned from the Fukushima Daiichi accident and international practices were taken into account to comply with the principle on mitigation of the possible releases of Vienna Declaration during the preparation of NREP.

Command and control system at national and local levels for emergency response under the

all-hazards approach has been established in NDRP. The local emergency management organization is established in NDRP and its interfaces with the national emergency management organization is explained in NDRP.

The emergency facilities and their locations suggested by the IAEA, and related provisions, are also adopted in the NREP. The organization for management of radiation emergencies and the transition of responsibilities during a radiation emergency is described in the NREP. The stakeholders assigned for response to radiation emergencies are in place. The national and local radiation emergency management organizations are established in NREP as a subset of the emergency management organizations defined in NDRP. Emergency response organization for radiation emergencies is also based on the emergency management organization provided in NDRP. The same response services are used and command and control system are explained by taking into consideration the emergency classes in NREP.

NREP covers;

- Terminology specific to radiation emergencies,
- Legal bases,
- The ministries, institutions and working groups that will take part in response in radiation emergencies,
- Planning bases (hazard assessment and emergency preparedness categories),
- Responsibilities of related parties;
- Response organization,
- On-site and off-site emergency management centers and locations,
- Occupational concepts (ideal responses);
- Training, drills and exercises;
- International authorities and conventions,
- Technical guidelines:
 - Hazard assessment,
 - Generic criteria,
 - Operational intervention levels,

- Guidance values for restricting exposure of emergency workers,
- Use of thyroid blocking agents,
- Response time objectives,

- Dangerous sources.
- Emergency planning zones, emergency planning distances and areas to be cordoned,
- Teams and facilities required for response.

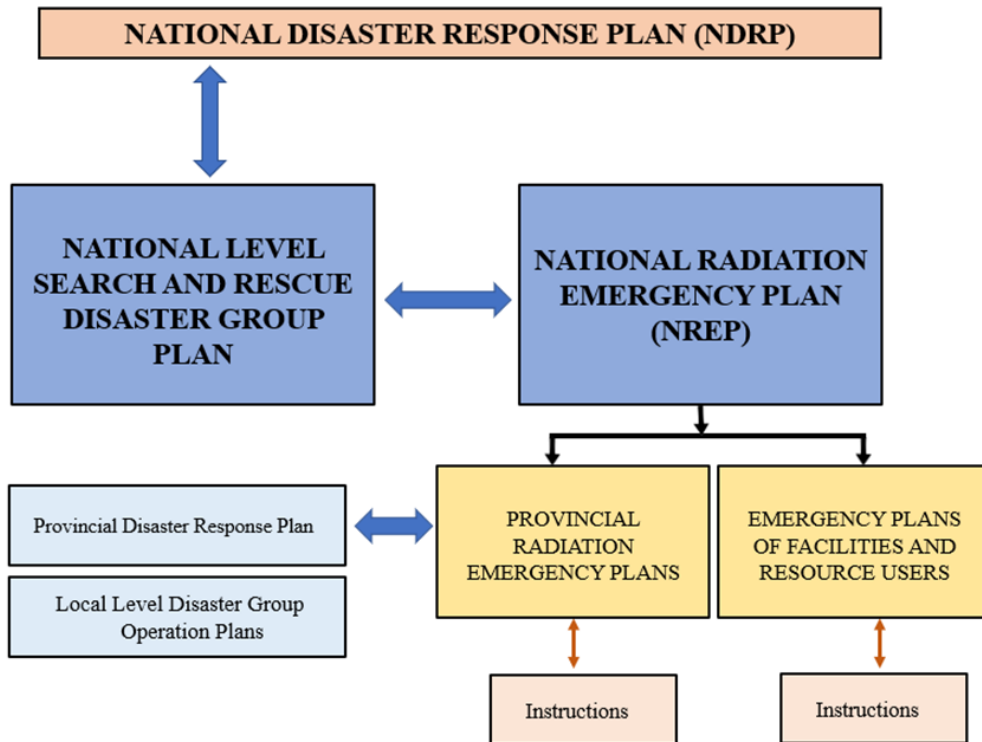


Figure 8 - The National Emergency Planning Framework

16.1.4 CLASSIFICATION OF EMERGENCIES

The emergencies that may take place in NPPs shall be classified by the operating organization of authorized facilities taking the Emergency Action Levels (EALs) into consideration according to Regulation on Management of Radiation Emergencies (2023). The guidance on the derivation of EALs for NPPs is included in NREP. The EALs will be derived specific to each plant type by the license holders and reviewed by the NDK.

Reactor parameters such as temperature, pressure, flow rate, specific events related to the plant safety, radioactive material releases, radiological measurement results, or other parameters related to extraordinary conditions based on different observable indications in the

plant, operational criteria (EALs), as determined during the licensing or preparation phase, should be used for rapid and accurate identification and classification of the emergency situation. The main purpose of the emergency classification system established by using EALs is to create a reference approach that can be used for all light water reactor designs. This system should take into consideration the features of the existing design when adapting to a particular design or construction.

The classification system is based on the possibility of causing a major release from the primary reactor building or reactor vessel or damage to the reactor core or critical safety systems in order to detect high radiation doses on-site. Emergency classes are associated with increased risk of damage to the reactor core or

increased probability of high radiation doses occurring off-site. The use of such a classification system will ensure that appropriate conditions are established and sufficient time is available for the on-site emergency response organization to be able to mitigate the situation and for the off-site emergency response organization to implement effective protective actions. EAL are predetermined variables that can be measured or threshold values for each observable case which were predetermined for each emergency class during the emergency preparedness phase.

NREP and Regulation on Management of Radiation Emergencies (2023) suggests the following emergency classes related to possible off-site consequences due to nuclear facilities:

- General emergency is an accident with actual or significant risk of radioactive release or radiation exposure which presupposes off-site emergency response activities. When this class of emergency is declared, measures for mitigation of consequences and protection of people must be taken urgently on-site and off-site,
- Site area emergency is a significant deterioration of protection level for people on site or near the NPP. When this class of emergency is declared, remedial actions and measures for on-site protection of people must be taken urgently, and arrangements shall be made to take the off- site protective measures if necessary,
- Facility emergency is a significant deterioration of protection level for people on site. When this class of emergency is declared, remedial actions and measures for on-site protection of people must be taken urgently,
- Alert is an accident with an indefinite or significant deterioration of protection level for the public or people

on site. When this class of emergency is declared, measures for evaluation and mitigation of consequences and enhancement of preparedness of on-site and off-site responsible organizations shall be taken urgently.

Based on the classification, the Operator shall notify and continue providing updated information to the off-site decision makers responsible for the respective protective actions.

According to the Regulation on Management of Radiation Emergencies (2023), within the scope of requesting technical support from off-site, important parameters of the NPP (safety parameters) that will be transferred to the NDK, provincial AFAD Centre and TSOs outside the facility (such as supplier of the NPP) are regulated.

16.1.5 ON-SITE AND OFF-SITE PLANS FOR THE NUCLEAR POWER PLANTS

Akkuyu Nuclear JSC is responsible for developing and implementing the on-site radiation emergency plan for the Akkuyu NPP which determines the required actions for mitigation of the accident consequences whilst respective governmental organizations (Mersin Governorship which is supported by AFAD Presidency and NDK) prepare the off-site radiation emergency plan (provincial radiation emergency plan).

The national protection strategy which is defined in NREP is adapted to local conditions via preparation of the provincial radiation emergency plans. The provincial radiation emergency plans are also event-type sub-plans of provincial disaster response plans. These provincial radiation emergency plans are prepared by each governorate according to a template which is prepared by NDK and AFAD Presidency. This template is mainly based on content of NREP. The roles of local institutions and working groups set forth in the legislation are elaborated in provincial radiation

emergency plans in accordance with the local level working groups' plans.

The provincial radiation emergency plan determines zones and distances of emergency planning and defines actions to be taken by authorized local and state authorities to protect the public, property and the environment in the event of an emergency. The public and the environment are protected by implementing radiation emergency plans developed for local authorities (Mersin province), companies and the facility (NPP) involved in the local response that are associated with the NREP and NDRP.

The topics that should be covered for on-site radiation emergency plan are given in the Regulation on Management of Radiation Emergencies (2023).

Regarding the implementation of radiation emergency plan, instructions and other necessary documents, the on-site emergency plan provide clear and straightforward interface with the off-site decision makers. The on-site emergency plan of Akkuyu Nuclear JSC has been developed and is currently under review and assessment process of NDK. The plan is subject to regular revision (including if specific circumstances require these changes) based on Regulation on Management of Radiation Emergencies (2023). Following each revision, the updated plan is submitted to the NDK for review and assessment. NDK also evaluates the consistency of the on-site emergency plan with the provincial radiation emergency plan and the NREP.

According to the Art. 7 of Regulation on Management of Radiation Emergencies (2023), the first full-scale exercise to test on-site and off-site emergency plans for each NPP should be conducted before the delivery of fresh nuclear fuel to the site and should be repeated at least every three years.

On 28 December 2022, the first full-scale emergency exercise for the Akkuyu NPP was conducted in Mersin province. The exercise tested both the on-site and off-site emergency plans, as well as the emergency response

capabilities to protect the population, under a scenario involving the declaration of a general emergency, with the participation of all relevant institutions and organizations. Also, the on-site part of the arrangements was tested on 15 March 2023 regarding improved communication procedures of Akkuyu Nuclear JSC with Turkish authorities and WANO. On 28 November 2024, a partial scale exercise was conducted by Akkuyu Nuclear JSC with AFAD Presidency and NDK (observer).

The second full-scale exercise to test on-site and off-site emergency plans for Akkuyu NPP is currently planned to be held in December 2025 by AFAD Presidency.

Regarding the Sinop NPP, in 2024 the NDK evaluated the site report submitted by TÜNAŞ, focusing on the applicability of radiation emergency measures to the proposed site. Following this assessment, the NDK granted site approval for the Sinop NPP on 3 April 2024. In line with national legislation and international requirements, including the NREP and the provincial radiation emergency plan to be prepared by the Sinop Governorship, a detailed on-site emergency plan will be developed and submitted to the NDK as part of the commissioning permit application.

For the Kıyıköy NPP, the same process will be followed by TÜNAŞ regarding emergency planning for the applications of site approval and commissioning permit.

16.1.6 TRAININGS AND EXERCISES

Regulation on Tasks Regarding Chemical, Biological, Radiological and Nuclear Threats and Hazards has the following provisions about CBRN threats and hazards including radiation emergencies:

- The training of the personnel who will be assigned within the scope of this regulation is given by AFAD Presidency and its local subordinates. Special CBRN trainings related to the

duties of institutions and organizations are provided by their own institutions.

- Ministries, relevant institutions and organizations and governorships organize CBRN exercises in cooperation with AFAD Presidency for the training of teams and personnel and participate in the exercises held in this field.
- Except for military training, in case national and international CBRN trainings are organized by institutions and organizations in our country, AFAD Presidency is informed and a result report is sent.

The provisions about the trainings of the off-site emergency response organization are given in NREP.

Moreover, the table-top, partial and full-scale, and field exercises that will be performed for radiation emergencies are also specified in NREP.

Provincial radiation emergency plans also include dedicated sections about trainings, drills and exercises.

The trainings, drills and exercises that operating organizations are performed in accordance with the Regulation on Management of Radiation Emergencies (2023).

16.1.7 THE EMERGENCY MANAGEMENT FACILITIES AND LOCATIONS

The emergency facilities and locations suggested by the IAEA and related provisions are adopted in the NREP. The Akkuyu Nuclear JSC and NDK have reached a common understanding regarding the on-site and off-site emergency facilities and locations.

NREP defines both on-site and off-site emergency management centers and points that will be used during radiation emergencies, their specifications, functions, activation times and possible locations. The off-site emergency management centers and points are as follows:

- Reference hospital,

- Provincial AFAD Directorate,
- Emergency response management point,
- Designated hospital,
- Radioactivity analysis laboratory,
- Notification point,
- Public information center,
- Radiological monitoring and evaluation center,
- Reception center,
- Supply and storage place.

The steps for establishing and building a proper off-site emergency management center or point are given in NREP.

The locations and specification of all these centers and points are also given in the provincial radiation emergency plan of Mersin.

The on-site emergency management centers and rooms according to NREP are as follows:

- Control room,
- Back-up control room,
- On-site emergency center,
- Operation support center,
- Technical support center.

The on-site emergency facilities, except the backup control room, can be collocated under the same roof.

The process of establishing a mobile crisis center for Akkuyu NPP in addition to the planned off-site emergency center (this center will be the back-up of the on-site emergency center) is currently ongoing. The on-site emergency facilities that should be built-up to satisfy the related requirements and to perform the related functions are given in the Regulation on Management of Radiation Emergencies (2023).

The Akkuyu JSC will establish a backup off-site emergency management center located beyond the emergency planning zones to provide the functions specified for the on-site emergency management center. The location of the center is determined by taking the opinion of the governorship of Mersin province where

the facility is located, AFAD Presidency and NDK. In case of radiation emergencies, the center can also be used by off-site authorities if it is deemed necessary by the governorship of Mersin province, within the scope of a protocol to be signed between Akkuyu JSC and the governorship.

16.2 INFORMATION TO THE PUBLIC AND NEIGHBOURING STATES

Türkiye is a party to the Early Notification and Assistance Conventions. The infrastructure for communication channels such as phone lines, facsimile facilities, computer and internet facilities, which are to be used for communication with IAEA and other parties, is in place. NDK is recognized as the national warning point and the competent authority for communication with IAEA.

Türkiye has bilateral agreements with Bulgaria, Romania, Ukraine, and Russian Federation on early notification in case of nuclear emergencies.

Provision regarding public information, including the public information center and responsible authorities are included in the NREP.

The general information about the radiation emergencies together with the protective actions and other response actions are given to the public who are residing, in the provinces where national NPPs are located and in provinces which are within the emergency planning zones of neighbourhood countries' NPPs, are given through public information meetings and the distribution of the brochures about the possible radiation emergencies.

One type of these brochures has general information which complies with the NREP and other types of these brochures include the information about the abovementioned topics by taking into local conditions such as brochures for Iğdır province cover the information about the local settlements within the emergency preparedness zone which is

determined for Metsamor NPP within the scope of provincial radiation emergency plan of Iğdır. The same type of brochures will be prepared for Mersin province also where the Akkuyu NPP is located.

The coordinating authority (AFAD Presidency) and regulatory body (NDK) also provide the information to the public about the radiation emergencies via their websites.

The public will be warned by AFAD Presidency about the radiation emergencies through the Integrated Warning and Alarm System (IKAS). IKAS; against air attacks, CBRN threats and hazards, the warning and alarm news to be received from the Air Force Command and the disaster and emergency news to be obtained from the institutions that are the source of danger news will be sent to the Provincial AFAD Directorate. It has been prepared in order to warn the people in the regions that may be under threat from being transmitted online. With the system, it is aimed to modernize the existing system in accordance with today's technology, and to support the siren warnings with audible warnings, cellular and social messages. IKAS consists of 3 sub-components working on the Uninterrupted and Secure Communication System as Information Reception and Dissemination System, Warning and Alarm (Siren) System and Message Alert System.

According to Regulation on Management of Radiation Emergencies (2023), in case of radiation emergencies, regular information is provided to the public and the media by AFAD Presidency during radiation emergencies in the general emergency class, and by NDK in cases falling under the radiation emergency classes other than this. These public information activities will be performed within the public information center, which will be established according to NREP.

The draft press releases for NPP emergencies are prepared by NDK and AFAD Presidency, which are present in the provincial radiation emergency plans of Iğdır and Mersin provinces.

The embassies in other states are to be provided with information and advice by the Ministry of Foreign Affairs in collaboration with AFAD Presidency and NDK according to NREP. The radiological monitoring results acquired from the RADISA stations are published on a publicly available website and shared with the European countries via the European Radiological Data Exchange Platform (EURDEP) voluntarily. Moreover, NDK is registered as the data provider to IRMIS of IAEA.

Due to the fact that the Metsamor NPP is close to the eastern border of Türkiye, some areas in the region are considered as critical locations, vulnerable to possible radiological consequences, where urgent protective measures shall be taken in case of an accident.

The following activities have been carried out in Iğdır province to inform the public during the preparedness stage for radiation emergencies:

- With the cooperation of NDK and AFAD Presidency, a regional workshop and desktop exercise, in which the emergency scenario originating from the Metsamor NPP was discussed, was held in Iğdır Governorate on 8-10 August 2016. In addition, on 11 August 2016, information was given to the village headmen and councils of elders of the villages that were considered to be within the PAZ of the Metsamor NPP in Iğdır. On the same date, another information meeting was held in Iğdır province Culture and Congress Center, with the participation of the Iğdır Governor and Deputy Governors, the other provincial protocol and the

public, which lasted approximately three hours.

- NDK, AFAD Presidency and Iğdır Governorship personnel went to the villages within the PAZ of the Metsamor NPP in Iğdır province between 7-11 August 2017 and carried out iodine tablet distribution and public information activities (distribution of the brochures).

Prior to the full-scale exercise, a workshop on nuclear emergency preparedness and response was performed in Iğdır province in April 2019. Subsequently, in June 2019, a full-scale exercise was conducted in Iğdır province, the closest city to the NPP located in a neighbouring country, with the participation of national and local authorities.

16.3 EMERGENCY PREPAREDNESS FOR CONTRACTING PARTIES WITHOUT NUCLEAR INSTALLATIONS

The Governorship of Iğdır province which is the closest city to the NPP located in a neighbouring country is supported by NDK and AFAD Presidency to ensure the necessary level of preparedness. In collaboration with the NDK and the AFAD Presidency, the Governorship prepared the Provincial Radiation Emergency Plan for Iğdır province. The Governorship and Provincial AFAD Directorate were informed about the necessary resources, tasks to be performed and exercises. Preparatory activities for the conduct of a full-scale exercise in Iğdır Province were completed, and the exercise was conducted in June 2019.

Another full-scale exercise for Iğdır province will be planned by AFAD Presidency for the coming years.

17 SITING (ARTICLE 17)

Each Contracting Party shall take the appropriate steps to ensure that appropriate procedures are established and implemented:

- i. for evaluating all relevant site-related factors likely to affect the safety of a nuclear installation for its projected lifetime;*
- ii. for evaluating the likely safety impact of a pro-posed nuclear installation on individuals, society and the environment;*
- iii. for re-evaluating as necessary all relevant factors referred to in sub-paragraphs (i) and (ii) so as to ensure the continued safety acceptability of the nuclear installation;*
- iv. for consulting Contracting Parties in the vicinity of a proposed nuclear installation, insofar as they are likely to be affected by that installation and, upon request providing the necessary information to such Contracting Parties, in order to enable them to evaluate and make their own assessment of the likely safety impact on their own territory of the nuclear installation.*

17.1 EVALUATION OF SITE RELATED FACTORS

17.1.1 SITE SELECTION AND RANKING METHODOLOGY

The site selection methodology in Türkiye is formed in accordance with national regulations and international practices. The methodology is based on the screening of candidate sites. Sites are evaluated considering 43 siting criteria grouped into four major categories: Economic, Engineering, Environmental and Sociological. A ranking is assigned from 0 to 5, for each criterion with the quantitative ranking metrics in the evaluation process.

The siting process for an NPP generally consists of an investigation of a large area to select one or more candidate sites and finally identifying preferred site or sites. The site survey process commonly begins with delineating the region of interest and proceeds through the first three steps. Later on, those candidate sites are investigated in detail. The last step belongs to the site selection process.

In order to determine the interested area(s), some site characteristics are considered with the aim of rejecting unacceptable areas or sites. Most generally, the experts of the utility can easily decide on the interested areas. In this phase, some near regional characteristics may

play a certain role in determining the area(s). For instance, Türkiye is a country having active seismic zones. Therefore, the earthquake is the main factor in the selection of NPP sites. Thus, if the candidate site is located in a seismically active region, it shall not be considered. According to regulations; NPPs shall not be located on sites directly situated on active faults. No aircraft shall enter into the airspace designated by 6500 ft altitude from the sea level and 2 km lateral distance from the controlled access area perimeter located inside the site boundaries and encompassing all nuclear safety structures. This airspace shall not be violated by air corridors or airport approach, landing and take-off operations. Free-field ground motion level cannot be used less than 0.15 g. All events identified as design basis external events should be rigorously examined, analysed and the parameters on which the plant's design will be based should be clearly established. Despite the use of engineering safety features in the design and strengthening of the plant structures to reduce the intensity and probability of events, if the risks associated with design basis external events in terms of plant safety are not acceptable the site shall be deemed unsuitable.

Likewise, cooling water source of the nuclear reactor is also inevitable major factor for the site selection from both a safety and an economic point of view. If the cooling water is insufficient for the once through cooling,

cooling towers should be used that will affect the reactor cost. The basic methodology for the siting is given in Figure 9. According to the Regulation on EIA, owner of the Project has to prepare and submit to the ÇŞİDB an EIA Report at the planning stage. The environmental aspects of the proposed installation which cover alternative sites are evaluated by the ÇŞİDB. Within the framework

of the duties and responsibilities of the ÇŞİDB, the activities have to be carried out considering the locations of the institutions, settlements, industrial facilities, transportation routes, schools, hospitals, etc., noise and air pollution at the site selected, possible effects of these works and compliance with the provisions of the relevant legislation.

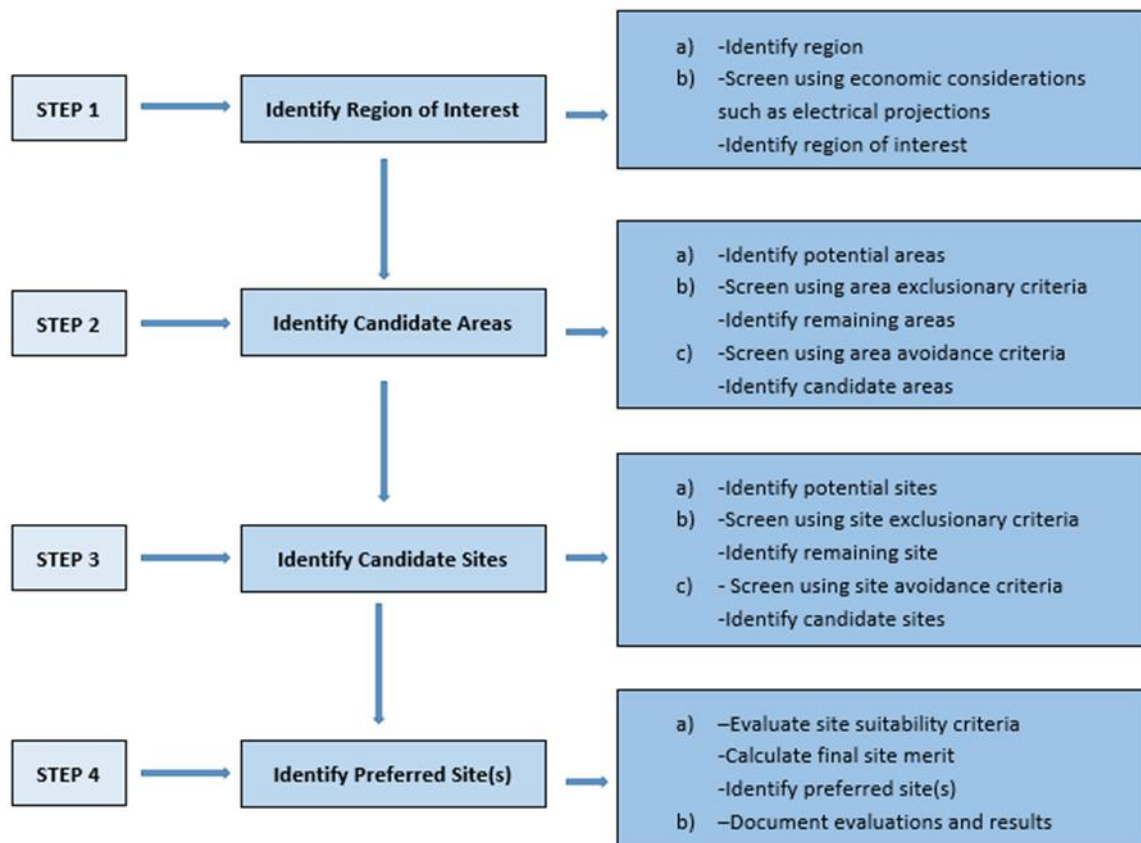


Figure 9 - Basic Methodology for the Siting

17.1.2 REGULATIONS ON SITE STAGES

Regulation on Authorizations Regarding Nuclear Facilities (2023) plays a key role in licensing of NPPs as it defines all licensing stages and the application sequence. Furthermore, the Regulation on Nuclear Power Plant Sites (2009) and Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) stipulate that the site of a nuclear installation is determined by considering the

site's effect to the NPP, the NPP's effect to the site and the applicability of the emergency plans. Applicability of emergency plans is also evaluated and planning zones are determined accordingly. Details are given in the Regulation on Nuclear Power Plant Sites (2009). The fundamental issues in this Regulation are based on IAEA Safety Requirement SSR-1. "Format and Content Guide of Site Report to be Submitted to the Nuclear Regulatory Authority for Site Approval of Nuclear Power Plants"

provides guidance for developing the site report.

17.1.3 LICENSING OF SITES

In order to construct an NPP, it is compulsory to obtain a license from NDK. The NPP licensing process is carried out in accordance with Regulation on Authorizations Regarding Nuclear Facilities (2023). The authorization process for a nuclear installation is being conducted in five phases; site approval, site preparation permit, construction permit commissioning permit and operating license.

The Owner/operator notifies NDK before site investigations, after the beginning of site investigations NDK performs inspections on site. Application document for site approval is the site report, for which a dedicated format is provided to the applicant to facilitate its preparation. The site report shall cover:

- Information regarding the purpose of the nuclear reactor facility, its power and the type of reactor,
- Information regarding the technical capability of applicant and institutions carrying out site studies on behalf of the applicant,
- Regional map clearly indicating the geography of the proposed site,
- Information and studies regarding topographical, geological, geotechnical hydrological, seismological and meteorological characteristics of the selected site,
- Layout alternatives for the reactor types considered,
- Information about the site evaluation with respect to natural phenomena such as earthquakes, floods and storms,
- Information about the site evaluation with respect to man-made external events such as aircraft crashes, fires, explosions and failure of dams, etc,
- Information regarding the adequacy of water sources to be used for cooling purposes,
- QA program for detailed site investigations,
- Information regarding the national electrical grid connection and reliability of the off-site electrical power,
- Preliminary studies on radiation exposure of the public due to liquid and gaseous radioactive effluents during normal operations, anticipated operational occurrences and accident conditions,
- Information regarding effects of ecology to the NPP, such as measures against biological fouling, etc,
- Other additional information which may be requested based on the developments and new practices on nuclear safety.

This report shall demonstrate that no site properties preclude the construction of a safe NPP at the proposed site; that vulnerabilities arising from site characteristics have been identified; and that, based on evidence, these can be remedied through engineering solutions, site protection measures and/or administrative measures.

Following the submission of the site report, review and assessment are conducted by Department of Nuclear Installations in NDK.

Technical support is generally obtained from universities serving as consultants and IAEA Missions as an independent review. Following the receipt of all reports, the Department of Nuclear Installations prepares a Site Evaluation Report and determines the site approval conditions. This report is then submitted to Nuclear Regulatory Board for a decision.

EIA positive decision is prerequisite before the site preparation permit. ÇŞİDB is the

responsible body for EIA process. A public participation meeting is organized by the owner of the project, at the place where the project is planned to be realized, on a date to be determined by agreement with the Ministry, to inform investors and to obtain their views and suggestions. The opinions of the public, relevant public institutions and organizations are reflected in the EIA report. In the EIA process, NDK contributes on radiological part of EIA report and relevant issues.

Upon acquiring site approval, detailed site investigation results and exact values of site related project parameters are submitted by licensee with the site preparation permit application. After granting this permit, owner can apply for construction permit with SAR.

17.1.4 NPP SITES

Türkiye has three identified NPP sites: Akkuyu, Sinop and Kıyıköy. The locations of these sites are presented in Figure 10.



Figure 10 - NPP Site Locations in Türkiye

17.1.4.1 THE AKKUYU SITE

Akkuyu Site license had been issued to Turkish Electric Company in 1976. The site license is transferred to Akkuyu Nuclear JSC, in accordance with the Akkuyu Project Agreement. However, TAEK requested Akkuyu Nuclear JSC to update site related studies and prepare an USR since the current project is different than the project that was supposed to be built in 1976, as well as site characteristics and parameters were determined in 1970s. Akkuyu Nuclear JSC is recognized as the Owner on 7 February 2011. The Akkuyu Site on the Mediterranean coast was allocated to Akkuyu Nuclear JSC in 2011 as specified in

the Akkuyu Project Agreement. Although the site license had already been granted in 1976 an update of the site report was required both because of the regulatory framework and international practice evolving and also because of the need to incorporate the site data gathered after 1976. Akkuyu Nuclear JSC started site investigations in Akkuyu for updating the site characteristics and parameters according to the Decree on Licensing of Nuclear Installations, 1983 and other related legislation.

The USR that addresses the site license validity was prepared by Akkuyu Nuclear JSC and submitted to TAEK in May 2012. Review and assessment conducted by Site Group with the

support of Advisory Committee on Nuclear Safety of TAEK and IAEA and positive decision for USR was given in December 2013. SPR was submitted in November 2014 and approved in February 2017.

Within the framework of implemented studies all the siting requirements and the necessary characterization studies have been addressed;

- a) Integration to the grid: The site has been evaluated for connection to the national 154 kV and 380 kV transmission distribution systems. EÜAŞ has been assigned the project to design and construct the transmission lines from the terminations of the NPP switchyard to a selected and construction of the NPP switchyard is part of the scope of the project under Akkuyu Nuclear JSC responsibility,
- b) Geology and Tectonics: The geology and tectonics of the site have been investigated in compliance with TAEK regulations and also the IAEA Safety Guide SSG-9. In particular, the four-scale approach (regional, near regional, site vicinity and site area) has been used to identify all relevant geological and tectonic structures. Using the criteria recommended in SSG-9, it has been demonstrated that there is no potential for fault displacement hazard at the site which can jeopardize the safety of the NPP SSCs
Seismology - The seismological database included paleoseismology, archeo-seismology, historical seismology, instrumental seismology and the monitoring of earthquakes in the near region and site vicinity. Requirements of TAEK regulations and recommendations of the IAEA Safety Guide SSG-9 have been followed. The complete methodology and approach were included in the USR. The results which include the seismic design bases for the NPP are reported in the Site Parameters Approval Report,
- c) Heat removal capability: The Mediterranean Sea will be the main source

of cooling, including the Ultimate Heat Sink. Subjects related to plant efficiency and sea water temperature have been studied. Furthermore, the potential for low water during extreme oceanographic events (such as tsunamis) has been evaluated. The final design bases for the NPP are provided in the SPR,

- d) Hydrology: This topic includes potential hydrological hazards and also the availability of fresh water for construction and plant use during operation. It also includes dispersion of effluents in aquatic media. The studies confirmed that the nearby creeks and streams do not pose a hazard of flooding the NPP site. Comprehensive coastal flooding investigations were conducted (including tsunamis, seiches, storm surges, tides, waves and sea level rise due to global warming). “Dry site” concept is used for protection from coastal flooding as recommended in IAEA Safety Guide SSG-18. The methods used were reported in the USR. The final design bases for the NPP are provided in the SPR. Dispersion of effluents (including radioactive and non-radioactive substances and thermal effects) in aquatic media/environment is discussed in the USR, SPR and also the EIA Report. The availability of fresh water for the construction and operation of the plant was being studied as part of preparatory site and engineering works,
- e) Demography: The demographic situation of the site was discussed in reports and emphasis was given to the feasibility of emergency planning given the present and projected population near the site,
- f) Meteorology: This topic includes potential meteorological hazards and the dispersion of effluents in atmospheric media. The extreme meteorological hazards at Akkuyu include storms, heavy precipitation (impacting hydrological events), extreme heat (air and water), lightning and small

tornadoes and waterspouts. All these hazards have been evaluated using the IAEA Safety Guide SSG-18. The methods used were reported in the USR. The final design bases for the NPP are provided in the Site Parameters Approval Report. Dispersion of effluents in atmospheric media was discussed in reports,

- g) Environmental Issues: Akkuyu Nuclear JSC submitted an Application Dossier to ÇŞİDB in 2011. On the basis of this Dossier, the ÇŞİDB selected a panel of experts who prepared a detailed Table of Contents for the EIA Report. This Table of Content includes the evaluation of all (radiological and non-radiological) impacts. It also includes all external hazards that could affect the safety of the installation. The EIA Report was submitted to ÇŞİDB in July 2013 and EIA positive decision was given in December 2014,
- h) External Hazards: Natural external hazards were already addressed under subject matter items (b, c, e, g). Human induced hazards have been evaluated using the recommendations of the IAEA Safety Guide NS-G-3.1. The sources of potential hazards include airplane crash and explosion of oil/gas tankers in the Mediterranean Sea. There are no acceptability issues related to these hazards,
- i) Local Infrastructure: The Project Site is located in the south of Türkiye in the Akkuyu Bay, which is located in the Büyükeceli Neighbourhood of Gülnar District of Mediterranean Sea Region Mersin province. It is approximately 37 km southwest of the center of the Gülnar District; 140 km westward from the city center of Mersin province. The area within

a 50 km radius of the site is a low population area with the primary industries being agriculture and tourism. Akkuyu Nuclear JSC has developed plans to establish on the site the necessary wharfs for the receipt of equipment and materials by sea and for fabrication and construction facilities. Akkuyu Nuclear JSC has developed plans for a permanent residence facility near the project site for the housing of personnel who will operate and maintain the Akkuyu units. At the project site, a large-scale temporary housing complex has been implemented to accommodate the construction workforce. The layout of Akkuyu NPP is given in the Figure 11.

- j) Access: Large-tonnage cargoes are unloaded and processed in the local port intended in Akkuyu site. The site is connected to the major Adana-Antalya highway (E-90 highway) via a 4.5 km road,
- k) Legal Issues: Akkuyu Project was formally approved by the parliaments of both countries and established the legal framework for the implementation of the Akkuyu NPP project. The Akkuyu Project Agreement also requires that the project be implemented in accordance with all Turkish national laws and regulations, including all license requirements,
- l) Nuclear Security: the Akkuyu Project Agreement establishes that there shall be joint cooperation specifically for the physical protection of the NPP. Protection of the site is the responsibility of Akkuyu Nuclear JSC. Both the Republic of Türkiye and the Russian Federation are signatories of the Convention of the Physical Protection of Nuclear Materials and the Treaty on the Non-Proliferation of Nuclear Weapons.

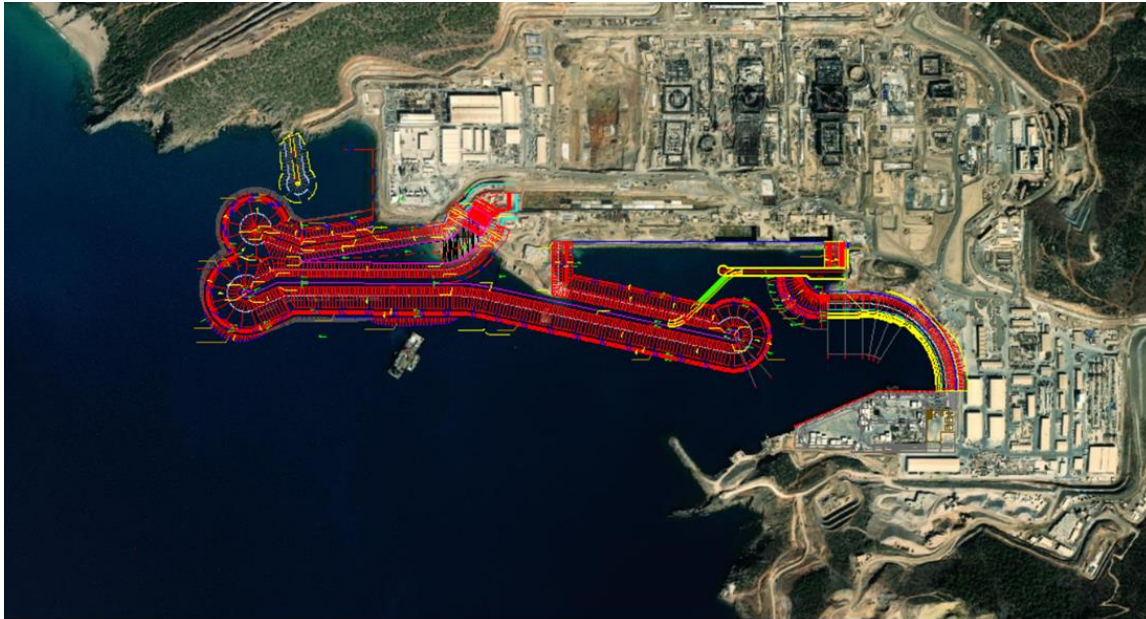


Figure 11 - The Layout of the Akkuyu NPP Site

Considering these investigations, review and assessment of SPR was carried out. As shown above, site characterization studies, as well as the review and assessment performed by TAEK, considered the relevant items of VDNS, particularly focused on grid reliability and tsunami issues for the site.

TAEK also utilized IAEA support in the review of this report and an IAEA mission and its follow-up on SPR were carried out in February 2015 and in July 2017, respectively. Upon completion of the review and assessment, site related design parameters of Akkuyu have been approved by TAEK on 9 February 2017.

In accordance with the provisions of Limited Work Permit granted for the first unit of Akkuyu NPP, Akkuyu Nuclear JSC has already started the Site Parameters Monitoring Program which ensures that any new information obtained shall be re-considered throughout the lifetime of the plant.

17.1.4.2 THE SINOP SITE

The Sinop site is located on the Black Sea coast in Sinop province. The site is situated approximately 16 km west-northwest of Sinop province. An owner application was made to

TAEK by EÜAŞ and EÜAŞ was recognised as the owner of the proposed Sinop NPP in August 2012.

The IGA was signed between Türkiye and Japan on the 3rd May 2013 for the construction of four units of ATMEA1 Reactor (1100 MWe per reactor). Based on the results and evaluation of the feasibility study prepared by the Japanese-led consortium to build the Sinop NPP project, the Turkish Government decided not to continue with Japan on this project.

Collective work related to site issues was carried out. Site feasibility studies were performed prior to this work by the Japanese-led consortium.

With the owner EÜAŞ; the project sponsors Mitsubishi Heavy Industries, ITOCHU Corporation and ENGIE were the parties of the Sinop NPP consortium partners.

Site related activities have been proceeded by EÜAŞ ICC to license the Sinop NPP site without the Japanese Consortium. Based on all conducted site investigations, onshore and offshore site characterization studies, a site report has been prepared for the application to the site approval (previously site license).

Regulatory review and control activities have been carried out by informative meetings and site inspections. As mentioned in GSR Part 1 (Rev. 1) - Requirement 25: NDK reviewed and assessed relevant information submitted by the vendor to determine whether activities comply with regulatory requirements and the conditions specified in the authorization.

The site characterization phase has been completed in 2021. Details for determining site properties, in scope of the works about site licensing by EÜAŞ is given below:

During the preparation of the site report, many baseline studies have been used and the following studies were performed; LIDAR, bathymetry, onshore geophysical and geotechnical surveys, and site parameters survey. Offshore geophysical and geomorphological studies, seismic hazard analysis studies, hydrographic and oceanographic surveys, natural external events hazards analysis such as tsunami, earthquakes, floods, storms, and external human-induced hazard analysis studies were also conducted. The baseline environmental and radiological studies, the hydrogeological and meteorological studies were performed as well. Moreover, emergency planning and socio-economic characteristics such as land use, population, and industrial installations were analysed.

A protocol was signed in September 2012 with The Scientific And Technological Research Council Of Türkiye - Marmara Research Center (TÜBİTAK-MAM) for evaluating studies both on land and off shore about the fields; geology, oceanography, geophysics, seismology, geotechnical, geodesy.

Japanese Atomic Project Company (JAPC) and Dokuz Eylül University (İzmir/Türkiye) performed Offshore Studies in 2013, for identification and characterization of potential seismogenic features in the near region in order to make an assessment of their contribution to the seismic hazard.

JAPC has performed Onshore Surveys in 2014 and 2015, for Identification and characterization of potential seismogenic features in the near region in order to make an assessment of their contribution to the seismic hazard at the Sinop NPP site. These surveys contain Boring, Seismic Reflections, PS Logging, Microtremor works.

Within these site studies, it is fundamental to assess seismic hazards. Therefore, a Senior Seismic Hazard Committee has been established by project sponsor companies so as to evaluate seismicity in accordance with US Guide - NUREG/CR-6372 (Recommendations for Probabilistic Seismic Hazard Analysis: Guidance on Uncertainty and Use of Experts)

The Senior Seismic Hazard Committee approach will allow considering uncertainties related to random and epistemic uncertainties, as recommended by the IAEA guideline SSG-9.

Marine Flora and Fauna, Bathymetry, Geomorphology, Lidar and Meteorology are other subjects of under the scope of site studies.

As an outcome of extensive site investigations, preparation of the Sinop NPP Site Report was initiated in 2017 and completed in 2021. The report is composed of 13 chapters covering a wide range of topics, including Geography and Demography, Industrial Installations, Meteorology, Hydrology, Geology, Geophysics and Seismology, Ecological Impacts, Human Induced External Events, Radiological Impact, Emergency Planning, Electrical Systems, Physical Protection and Quality Management.

In 2022, EÜAŞ ICC was established in Türkiye, succeeding EÜAŞ ICC, with the transfer of all assets, liabilities, and rights from the latter to the newly established company. Subsequently, EÜAŞ ICC was renamed as TÜNAŞ. In line with a request by EÜAŞ, its status as the owner of the Sinop NPP project was officially terminated by the NDK on 16 January 2023. Thereafter, TÜNAŞ was

recognized by the NDK as the project owner on 27 January 2023.

Following the transfer of responsibilities and corporate restructuring, TÜNAŞ finalized the Sinop NPP Site Report. On 10 May 2023, the RDL for the project was approved by the NDK Regulatory Board. Subsequently, TÜNAŞ submitted an application to the NDK for site approval on 30 May 2023. The compliance check of the submitted documentation was completed, and the formal review and evaluation process for site approval was initiated on 16 June 2023. The working group review reports were finalized by 15 January 2024, and the NDK's Safety Evaluation Report was completed by the end of March 2024. Site approval for the Sinop NPP site was officially granted on 3 April 2024, following the comprehensive evaluation of the site report submitted by TÜNAŞ.

The next step in the Sinop NPP Project is to obtain the site preparation permit. In parallel, discussions with potential vendors for the development of the Sinop NPP are ongoing. Within the scope of site investigations, site characterization studies were commenced in 2017 and were completed in 2021. The results of these studies form the basis for defining the site parameters that will support the plant design. In accordance with the Regulation on Authorizations Regarding Nuclear Facilities (2023), the finalized list of Sinop site parameters will be submitted to the NDK as part of the site preparation permit application.

All site-related activities, including studies and evaluations, have been conducted under the regulatory oversight through formal inspections. These inspections have involved experts from the former TAEK, as well as external consultants from various academic institutions.

17.1.4.3 THE KIYIKÖY SITE

The Kıyıköy site is a newly identified location for NPP development. For the third NPP project planned in Türkiye, TÜNAŞ submitted a notification of intent on 5 April 2024 for the

establishment of an NPP at the site located in the Kıyıköy district of Kırklareli province. Following its review, the NDK formally registered TÜNAŞ as the organization responsible for the implementation of the NPP project at the Kıyıköy site.

On 26 September 2024, the RDL specific to the Kıyıköy NPP project was approved by the NDK Regulatory Board. Site characterization studies were initiated in 2024 and are currently ongoing under the responsibility of TÜNAŞ.

The project schedule of site investigation activities related the planned NPP in Kıyıköy has been submitted to the NDK. Along with authorization activities, both onshore and offshore activities are currently being carried out.

EIA is planned to be implemented by 2026.

At present, Türkiye is engaged in negotiations with potential vendor countries for the construction of an NPP at the Kıyıköy site.

17.2 IMPACT OF THE INSTALLATION ON INDIVIDUALS, SOCIETY AND ENVIRONMENT

The characteristics of the natural environment, population and individuals in the region that may be affected by potential radiological impacts in operational states and accident conditions through all possible transport routes are investigated and assessed. Applicability of emergency plans is also evaluated and planning zones are determined accordingly. All these characteristics are monitored throughout the lifetime of the plant. In accordance with requirements and criteria of the NDK, an adequate quality assurance programme shall be established and applied to conduct and control the effectiveness of the site investigations and assessments.

Regulation on Nuclear Power Plant Sites (2009) and Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) require the effects of the NPP to the site and the

applicability of the emergency plans. The feasibility of the implementation of the emergency measures in the emergency planning zone within the projections in the population during lifetime of the plant is demonstrated. Details are given in these regulations.

ÇŞİDB defines some requirements to the environmental studies and the radiological and non-radiological impact of the plant. EIA Report consists of assessment of main impacts any NPP during construction, operation (normal operation, design and beyond design basis accidents (BDBA)) and decommissioning process on aquatic and terrestrial ecosystems, the personal of the plant and the public:

- Thermal impact, related to operation of cooling systems of the plant' equipment (warm water release),
- Environmental impact, due to usage of chemicals in plant process, cleaning and water treatment systems, prevention of bio growth on the equipment and cooling sea water supply lines, emissions in air of combustion products of fossil fuels, etc.,
- Radiological impact,
- Electromagnetic impact, sources of which could be gridlines, high voltage equipment on the site,
- Noise impact,
- Impacts on the protected areas.

17.2.1 THE AKKUYU NPP SITE

Within the USR and SPR there is a preliminary assessment of the radiological impact of the plant. The assessment takes into account severe accidents and normal operation releases based on up to date meteorological data to estimate the atmospheric dispersion factors for Akkuyu NPP site. In addition, ground surface contamination and public exposure doses have been determined for gaseous releases as well as the evaluation of the liquid discharges to the environment. The analyses comply with the

relevant Russian standards in the field and have been based on data for the reference plant since the final dispersion factors relevant to the actual design is provided in the PSAR.

EIA Report consists of assessment of main impacts of Akkuyu NPP during construction, operation (normal operation, design and BDBA) and decommissioning on aquatic and terrestrial ecosystems, the personal of the plant and the public. On the other hand, monitoring program on this subject is ongoing.

17.2.2 THE SINOP NPP SITE

One of the exclusionary criteria for site screening is the impact of the project on the environment. A Positive Decision of the EIA is a prerequisite for the approval of Site Report. A comprehensive set of analysis were conducted through the EIA study. In order to evaluate the possible environmental impacts due to project realization and operation, baseline environmental data of the region were collected and non-radiological and radiological studies were performed. Human & socioeconomic aspects are also considered. The EIA process started with the submittal of EIA application file to the ÇŞİDB on 27 December 2017. The Public participation meeting was held on 6 February 2018 in Sinop. The ÇŞİDB has established the Examining & Evaluation Commission of 40 members (composed of related public institutions, universities) and the standardized special format of the EIA report for the Sinop NPP Project was provided to EÜAŞ ICC on 19 March 2018.

The EIA Positive Decision for the Sinop NPP Project was initially granted to EÜAŞ ICC, as the project owner, by the ÇŞİDB on 11 September 2020. The ÇŞİDB later confirmed to TÜNAŞ and other relevant parties that the EIA Positive Decision remains valid for TÜNAŞ as the current project owner.

17.3 CONSULTATION WITH OTHER CONTRACTING PARTIES LIKELY TO BE AFFECTED BY INSTALLATION

Türkiye's legislative and regulatory framework ensures that nuclear materials and facilities are utilized and nuclear activities are performed with proper consideration for health- safety, security and protection of the people and the environment. In this respect, Türkiye signed and/or approved international agreements and conventions.

Four bilateral agreements for Early Notification of Nuclear Accidents are in force between Türkiye and Bulgaria, Romania, Ukraine and Russian Federation. No new agreements or conventions are signed after the Fukushima Daiichi accident.

After the accident at the Fukushima Daiichi NPP, a number of studies have been implemented by ENSREG to review and improve the nuclear facilities of the EU nations. In this context, safety and risk assessment studies have been initiated within the scope of stress tests.

An undertaking has been initiated by the EC to allow participation of neighbouring countries to the stress tests. Türkiye is among the countries that signed the Joint Declaration on comprehensive risk and safety assessments of nuclear plants, also called Stress Tests and Türkiye observes these studies and supports the decisions reached by consensus. As an outcome of the Joint Declaration, TAEK, former regulatory body of Türkiye, has requested applicable stress test evaluations for the Akkuyu project from the Akkuyu Nuclear JSC.

Akkuyu Nuclear JSC developed the applicable stress test evaluations for the Akkuyu project and submitted to TAEK.

The Stress Tests National Report of Türkiye, which included evaluations of the regulatory body was finished in May 2012 and opened for comments of the relevant bodies (ETKB and Ministry of Foreign Affairs). The finalized report was sent to the EC on June 2012.

At the end of December 2018, updated version of “Stress Tests National Report of Türkiye” was prepared taking into consideration the comments of ETKB and the Ministry of Foreign Affairs.

On mid-2021, discussions on organisation of the peer review started with ENSREG.

Peer review team questions were sent to NDK on 16 December 2021. Answers to peer review team questions were prepared and sent to ENSREG on 15 March 2022.

First step of the peer review of Akkuyu NPP was held on 16-18 May in Ankara, NDK Headquarters. During this meeting, the peer review team discussed the findings of the national report and answered any questions. After that, the second part of the Stress Tests expert visit was conducted at the Akkuyu Site on 27-31 May 2024. Following these visits, the Stress Tests Türkiye Expert Assessment Report dated 13 November 2024, prepared by ENSREG experts, was approved by the ENSREG management at a meeting held in Brussels on 28 November 2024, and the joint press release prepared by ENSREG and NDK regarding the Report was published on the websites of both institutions on 20 March 2025.

Each Contracting Party shall take the appropriate steps to ensure that:

- i. the design and construction of a nuclear installation provides for several reliable levels and methods of protection (defense in depth) against the release of radioactive materials, with a view to preventing the occurrence of accidents and to mitigating their radiological consequences should they occur;*
- ii. the technologies incorporated in the design and construction of a nuclear installation are proven by experience or qualified by testing or analysis;*
- iii. the design of a nuclear installation allows for reliable, stable and easily manageable operation, with specific consideration of human factors and the man-machine interface.*

18.1 IMPLEMENTATION OF DEFENCE IN DEPTH

Implementation of DiD in design and construction phase is ensured by regulations and regulatory control. The Regulation on Design Principles for Safety of Nuclear Power Plants (2008) is in force to regulate the safety principles that must be followed in the design of NPPs in order to achieve the nuclear safety objectives defined by the NDK. Similarly, the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) regulates the safety principles to be complied by the authorized person in NPPs to achieve the nuclear specific safety objectives defined by the NDK.

According to these regulations, NPPs are designed so as not to deviate from safety objectives under normal operation, anticipated operational occurrences and accident conditions. For the construction of NPPs, safety evaluation of design and achievement of quality during manufacturing and construction are the main principles addressed in the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008). These regulations take into account general requirements related to DiD such as physical barriers, redundancy, diversity, physical separation, conservative design and high quality in construction,

accident management and emergency response measures.

“Guide on Specific Design Principles”, which is issued in 2012 and updated in 2021, defines specific principles to be applied during the design stage of an NPP. Among the principles which are defined in the Guide are levels of DiD, plant states and objectives, seismic and aircraft crash hazards.

The impact of related sequential natural events is addressed in the Regulatory Board Decision on the Format and Content of the Site Report to be Submitted to the Nuclear Regulatory Authority in the Application for Site Approval for Nuclear Power Plants (2025), the Regulation on Nuclear Power Plant Sites (2009) and the Regulation on Authorizations Regarding Nuclear Facilities (2023).

External events, related sequential events, and their effects on the site are identified in the early stages of the siting process. In the case of external or sequential events, the associated hazards are defined using parameters that both characterize the hazards and serve as input for the plant’s design.

When considering the hazards associated with external events, special attention is given to the effects of combinations of these events. The relevant external events, their combinations, and sequential events are considered in the

design and assessed according to the above-mentioned regulations.

NDK also takes into account the IAEA Safety Standards, which provide requirements for ensuring nuclear safety, and requests nuclear facilities to implement them in accordance with the relevant requirements. On the other hand, efforts to revise the aforementioned regulations, taking into account the current relevant standards of the IAEA, have been initiated and are ongoing.

The achievement of safety objectives in the Akkuyu NPP project is ensured by the consistent implementation of the concept of DiD based on the use of a system of physical barriers to the propagation of ionizing radiation and radioactive substances into the environment and a system of technical and organizational measures to protect the barriers and maintain their effectiveness, as well as to protect personnel, the population and the environment. DiD, in accordance with regulatory documents, consists of five levels:

Level 1 of the DiD - Prevention of abnormal operation and failures. Safe and reliable operation of the NPP at this level is ensured by adopted design solutions (site placement, acceptable level of reliability due to condition monitoring and maintenance and repairs, use of a single licensing base).

Level 2 of the DiD. Prevention of design basis accidents by normal operation systems. To implement the DiD at this level, the design provides for redundancy of equipment of normal operation systems and establishes operational limits.

Level 3 of the DiD. Prevention of initiating events from developing into design basis accidents, and design basis accidents from developing into BDBA using safety systems. The design provides for protective, localizing, supporting and controlling safety systems. The design provides for safety systems with active and passive operating principles.

Level 4 of the DiD. Management of BDBA using passive and active elements of safety systems. The active and passive safety systems provided for by the design, as well as special technical means for controlling the BDBA, ensure protection of the containment from destruction and maintenance of its operability and return of the NPP to a controlled and safe state.

Level 5 of the DiD. Emergency planning. To implement Level 5 of the DiD, the design provides for radiation monitoring systems at the site and in the premises of the NPP, as well as in the area around the NPP. The scope of monitoring is sufficient to predict the development of the radiation situation and make a decision on the need to implement plans for measures to protect personnel and the population.

18.2 INCORPORATION OF PROVEN TECHNOLOGIES

Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) requires the use of proven technologies in design. It requires that technical and administrative decisions made for ensuring NPP safety shall be well proven by the previous experience or tests, investigations, operating experience of prototypes and shall meet requirements of regulatory documents. Such approach shall be applied not only in development of equipment and design of the NPP but also in manufacture of equipment, construction and operation of the NPP, its back fitting and reconditioning of its systems (elements).

Specifically, the equipment is required to be proven by experience or testing. If a first of a kind equipment is used, safety is demonstrated to be adequate by appropriate analysis and by prototype testing.

Physical and mathematical models used in the design are verified by experiments, operational tests and data analyses. In the safety analysis of the plant, conservative data and models are

used. Realistic data and models are used only when their validity and suitability are proven.

Another provision for use of a proven power plant design is the reference plant approach which is in parallel to the IAEA's INSAG-26 document on "Licensing of the First Nuclear Power Plant" and was used in the Akkuyu NPP Project.

Novovoronezh-II NPP in Russian Federation is approved as the reference plant for Akkuyu NPP by AEC of the former regulatory body, TAEK.

NDK has benefited from information on the review and assessment activities related to the licensing of the Novovoronezh-II NPP and conducts ad hoc site visits to support deeper understanding of systems and other issues at site.

In developing the Akkuyu NPP V-509 reactor design, the design results, calculation and experimental justification of the design of the V-392M, V-491 (AES-2006) reactor units, as well as the operating experience of reactors with VVER-1000 were used:

- increase in the unit capacity of the reactor to 3300 MW with maximum use of the design solutions of the V-392M reactor plant (AES-2006),
- fewer welded joints are used in the reactor (four instead of six), the length of the vessel is increased by 300 mm,
- a sparse arrangement of tubes in the tube bundle is used in the steam generator, the diameter and length of the steam generator vessel are increased,
- the oil system is excluded from the main circulation pump unit, changes are introduced based on the experience of operating the unit at the Tianwan NPP,
- the duration of the inter-refuelling period of the fuel cycle is increased to 18 months,

- improvement of the operating parameters of the reactor plant in order to increase the efficiency of the NPP as a whole,
- increase in the service life of the main equipment to 60 years,
- improvement of safety systems.

18.3 DESIGN FOR RELIABLE, STABLE AND MANAGEABLE OPERATION

The Regulation on Design Principles for Safety of Nuclear Power Plants (2008) and Russian safety rules provide requirements to ensure reliable, stable and manageable operation.

In-service inspection and maintenance features are taken into consideration in design to control the primary coolant system integrity during the operational lifetime of the plant in accordance with Regulation on Design Principles for Safety of Nuclear Power Plants (2008).

Regulation also requires organizations to provide automatic systems that would maintain three safety functions which includes safely shut down of the reactor, maintaining it in a cold state and limiting any release of fission products that might possibly ensue, if operating conditions were to exceed predetermined set points. The design is required to be such that it can cope with the accidents and the outcomes stay within the design basis limits, including information and instrumentation means needed by the staff for following and intervening in the course of accidents. In case of any deviation, systems shall be automatically actuated to provide the operating staff with sufficient time to assess systems, review possibilities and decide on a subsequent course of action.

It is also required that parameters to be monitored in the control room are selected and their displays are arranged during the design stage to ensure clear and unambiguous indications of the status of plant conditions, especially for the purpose of identifying and diagnosing the automatic actuation and operation of a safety system or the degradation

of DiD. Independent monitoring and essential capability for control needed to maintain ultimate shutdown, cooling and confinement shall be provided by one of more remote control points separate from the main control room for circumstances in which the main control room may be uninhabitable or damaged.

In Akkuyu NPP, safety systems are used to prevent BDBA. If the initiating event leads directly to a design basis accident, the task of safety systems is to prevent the initiating event of a design basis accident from developing into a BDBA. Safety systems include:

- protective safety systems (ensuring subcriticality, heat removal, overpressure protection),
- localizing safety systems (preventing or limiting the release of radioactive products into the environment),
- supporting safety systems (supplying safety systems with energy, working environment and creating conditions for their operation, ensuring the work of personnel),
- control safety systems (initiating actions of safety systems, monitoring and controlling them in the process of performing a given function).

The design provides for special technical means for managing BDBAs:

- an alternative diesel generator unit,
- an alternative component cooling circuit with a mobile pump unit and a mobile heat exchanger,

- an additional cooling system for the spent fuel pool,
- a system for catching and cooling the molten core outside the reactor,
- in addition, any technical means available at the NPP can be used to manage the BDBA, regardless of their original purpose.

To reduce potential radiological consequences, the following design measures are implemented to ensure that radioactive substances remain within established boundaries:

- 1) localization of radioactive products inside the containment by closing the valves of all process pipelines and ventilation system air ducts passing through the boundary of the containment (electric power for the localizing valves is supplied from batteries),
- 2) removal of hydrogen from the containment using passive hydrogen recombiners,
- 3) maintaining the under pressure in the annulus between the inner and outer containment by operating a localizing ventilation system designed to ventilate the annulus,
- 4) ensuring a reduction in pressure in the primary containment due to the operation of special technical means (sprinkler system, independent additional cooling system of the spent fuel pool),
- 5) core catcher.

19 OPERATION (ARTICLE 19)

Each Contracting Party shall take the appropriate steps to ensure that:

- i. the initial authorization to operate a nuclear installation is based upon an appropriate safety analysis and a commissioning programme demonstrating that the installation, as constructed, is consistent with design and safety requirements;*
- ii. operational limits and conditions derived from the safety analysis, tests and operational experience are defined and revised as necessary for identifying safe boundaries for operation;*
- iii. operation, maintenance, inspection and testing of a nuclear installation are conducted in accordance with approved procedures;*
- iv. procedures are established for responding to anticipated operational occurrences and to accidents;*
- v. necessary engineering and technical support in all safety-related fields is available throughout the lifetime of a nuclear installation;*
- vi. incidents significant to safety are reported in a timely manner by the holder of the relevant licence to the regulatory body;*
- vii. programmes to collect and analyse operating experience are established, the results obtained and the conclusions drawn are acted upon and that existing mechanisms are used to share important experience with international bodies and with other operating organizations and regulatory bodies;*
- viii. the generation of radioactive waste resulting from the operation of a nuclear installation is kept to the minimum practicable for the process concerned, both in activity and in volume, and any necessary treatment and storage of spent fuel and waste directly related to the operation and on the same site as that of the nuclear installation take into consideration conditioning and disposal.*

19.1 INITIAL AUTHORIZATION

Commissioning of an NPP requires permit from the NDK as it was stated both in the Law No. 7381 and the Regulation on Authorizations Regarding Nuclear Facilities (2023). With the commissioning permit the Owner/operator is authorized to perform the commissioning tests to be carried out before loading nuclear fuel. Information on the documents subject to regulatory control during the review and assessment process based on the commissioning permit is included in the Regulation on Authorizations Regarding Nuclear Facilities (2023).

Safety aspects of commissioning and operation of NPPs are included in Regulation on Specific Principles for Safety of Nuclear Power Plants (2008). During the commissioning phase, the operational settings are made in accordance with the design and safety analysis. The commissioning program is established and

implemented to verify that the plant's important elements, especially for safety and radiation protection, have been constructed in accordance with the design and are functioning as intended. The commissioning program includes checks of the physical and functional characteristics of the structure, system and components for verification.

19.2 OPERATIONAL LIMITS AND CONDITIONS

Safety limits for important system variables, safety system limit settings and settings of operational limits and conditions are determined according to the Regulation on Design Principles for Safety of Nuclear Power Plants (2008).

According to the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008), the plant is operated within the operational limits and conditions that determine the safe operating limits. Operational limits and

conditions should be specified for all situations in the normal operation of the power plant, such as start-up, hot or cold start, power operation, shutdown, closure, maintenance-repair, testing and fuel loading. Except as permitted by the procedures approved by the NDK, the operating limits and conditions shall not be deliberately exceeded.

According to the Regulation on Authorizations Regarding Nuclear Facilities (2023), addition to the SAR which include operational limits and conditions submitted during application of construction permit and operating license, the licensee finalizes the operational limits and conditions within the framework of the results of the tests within the scope of the stages of starting operation and submits them to the NDK. The licensee starts operation in accordance with the operating license authorization conditions updated to include the operating limits and conditions deemed appropriate by the NDK. For unplanned shutdown of the nuclear installation or unit as a result of approaching or exceeding a safety limit in the operational limits and conditions, NDK shall be notified. In such a case, re-operation of the nuclear installation or unit is subject to the authorization of the NDK. Changes to operational limits and conditions are subject to permit of the NDK.

Regulation on Organizational Structure and Personnel in Nuclear Installations (2022) establishes that operational limits and conditions of the installation and authorization conditions are part of personnel trainings content.

19.3 PROCEDURES FOR OPERATION, MAINTENANCE, INSPECTION AND TESTING

The scope and regulatory requirements regarding the procedures for the inspection and testing of a nuclear installation are included in the Regulation on Inspections and On-Site Examinations Regarding Nuclear Energy and Ionizing Radiation (2023). The provisions for maintenance, repair, test and inspections are

stated in Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) which include that the installation is to be operated according to approved hierarchical procedures which need to be updated regularly. The activities are performed in the framework of a program, which is supported by a quality management system and subject to approval of NDK.

According to the provision about modification management in the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) any modifications regarding to operational procedures can only be implemented after they are approved in accordance with the rules set by the NDK. In Art. 18 of Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022), it is stated that mechanisms for the determining the safety significance of the changes to be made in its activities and the information and documents related to these activities and for the approval of the changes with a graded approach within the framework of their significance are established by the licensee, considering the relevant regulations of the NDK.

According to Art. 8 of Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022), the management system documents are prepared for the nuclear installation staff and access to these documents by them is ensured. In terms of incorporation of operational procedures into the management system of the nuclear installations, provisions stating that the process documents determine the activities and acceptance criteria applicable to the works that make up the processes, the inspection, testing, verification and validation, and the responsibilities for the fulfilment of these activities are included in Art. 13 of this Regulation.

19.4 PROCEDURES FOR RESPONDING TO OPERATIONAL OCCURRENCES AND ACCIDENTS

Art. 5 of the Law No. 7381 and Art. 5 of Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022) include the responsibility of the licensee for taking appropriate and adequate measures for preparation and response to radiation emergencies.

Regulations governing the on-site management of radiation emergencies for facilities and applications subject to regulatory control, - where activities involving nuclear energy and ionizing radiation are carried out- are set forth in the Regulation on Radiation Emergencies Management (2020). The relevant provisions are presented under the section titled “Article 16 – Emergency Preparedness” of this report.

According to the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008), which includes the requirements for anticipated operational events, accidents and emergency management, in case of possible severe accidents, accident management planning is made based on the results of the analyses made to determine the behaviour of the plant and accident management procedures are developed.

The Regulation on Authorizations Regarding Nuclear Facilities (2023) establishes requirements for submitting operational and accident related procedures and SAMG which include anticipated operational occurrences, event-based and symptom-based EOP with application for operating license.

19.5 ENGINEERING AND TECHNICAL SUPPORT

The Regulation on Specific Principles for Safety of Nuclear Power Plants (2008) requires licensee/plant management to provide the necessary engineering and technical support

throughout the life of the plant to ensure the safe operation of the plant through a technical team. This technical team provides technical and engineering support during modifications, repairs and special tests in the plant, as well as the analytical support necessary for the safety of the plant. It is the responsibility of the licensee/plant management to ensure that the resources required for the team are available.

The continuing safe operation of a plant requires the support of an engineering organization, which can be called on as required to assist with plant modifications, repairs and special tests, and to provide analytical support as necessary for the safety of the plant.

According to Art. 7 of Law No. 7381, the NDK may receive technical support services within the scope of inspection and on-site examination in a way that is not binding for the NDK in terms of its results. In order to provide technical support services such as all kinds of analysis, consultancy, surveillance, examination, research, inspection, testing, control, training and certification that NDK may need while performing its duties, NÜTED has been established.

19.6 REPORTING OF INCIDENTS SIGNIFICANT TO SAFETY

The requirement for recording, notifications and reporting defined in the legislation and the management system is specified in the Art. 5 of Law No. 7381. In the Regulation on Authorizations Regarding Nuclear Facilities (2023) and the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008), there are requirements for the licensee to promptly inform the regulatory body about abnormal events, which include events significant to safety, to prepare operating reports, to provide information about events, and to get permission for re-operation after shutdown as a result of the event.

The necessity of having a safety culture that ensures timely reporting of problems related to

technical, human and organizational factors and any deficiencies in the structure, system and components in order to prevent safety weakness is mentioned in the Art. 7 of Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022). There are activities in terms of evaluating the effectiveness of the management system such as keeping records of events and emerging safety problems, examining and reporting possible results to determine their importance and causes, determining and implementing corrective actions to prevent recurrence of events, reflecting the lessons learned in the risk records, evaluating and reporting the effectiveness of corrective actions is mentioned in Art. 11 of the mentioned regulation.

According to the Regulation on Recording, Notification and Reporting in Nuclear Facilities (2024), there are requirements for records to be kept throughout the plant life, all reports for authorization processes including event reports and event notification submitted by the licensee to the NDK in defined content and time. This regulation establishes event classification including low-level events and near-misses and criteria of event notification and reporting with the use of the INES scale.

To provide submitting event notifications immediately and all reports to the regulatory body in a timely manner, there is a draft software tool preparation within the NDK. It is planned to use this software tool to keep all documents mentioned in Regulation on Recording, Notification and Reporting in Nuclear Facilities (2024) to review operating experiences in the long term by the NDK. It is also expected to have statistics about plant progress and events to prevent recurrence.

19.7 OPERATIONAL EXPERIENCE FEEDBACK

Analysing the causes and effects of the events, preventing the recurrence of the events and implementing necessary modifications in line with the experiences are addressed in the

Regulation on Specific Principles for Safety of Nuclear Power Plants (2008). In Art. 7 and 8 of Regulation on Management System in Nuclear Facilities, Radiation Facilities and Radioactive Waste Facilities (2022), it is mentioned that the use of international good practice examples to improve safety culture and the identification of risks that may affect safety related to activities and including regulations for timely measures in the management system.

According to the Regulation on Authorizations Regarding Nuclear Facilities (2023), operating experience program of licensee needs to be submitted to the NDK as a part of operation license application. The relevant documents on operating experience program include procedures which establish a system to identify and analyse events, to identify and imply corrective actions, to share experiences with NDK and international organizations, for trending and for storage of all OEF documents. It is also expected to describe of organization structure to show responsible department/division and working group on OEF on these documents.

According to the Regulation on Recording, Notification and Reporting in Nuclear Facilities (2024), licensee is responsible to submit operating experience report to the NDK annually. In this report, it is expected to include information about the summary of the safety assessment, root cause analysis and corrective and preventive actions taken regarding the events (including near misses and low-level events), lessons learned, trending (including risk evaluation) and the effects of these experiences on the improvement of safety performance.

The responsibilities regarding the periodic review and updating of the personnel training and competency program, considering the current and future needs of the facility and lessons learned from operating experiences, are included in the Regulation on Organizational Structure and Personnel in Nuclear Installations (2022).

Draft Guide on Operating Experience Program will include fundamental activities of OEF such as analysis of internal and external events, implement modifications according to the lessons learned, trending to prevent recurrence and disseminate experience to the other licensees, international organizations and other RBs. In this draft Guide, event notification and reporting will also be described in detail according to the Regulation on Recording, Notification and Reporting in Nuclear Facilities (2024) and using software to submit this information to the NDK.

Art. 5 para. 1 of PD No: 95 establishes responsibility of the NDK to inform relevant national or international organizations about extraordinary events. Based on this Art., national coordination of IAEA and OECD/NEA International Reporting System and the membership of OECD/NEA CNRA Expert Group on Operating Experience are conducted by the NDK. The event and document databases of these organizations are actively used to follow international operating experiences and to have lessons learned from the similar reactor type with Akkuyu NPP and other reactors. International Reporting System whose national coordination is carried out by the NDK, is actively used as international information database on operating experience for safety assessments due to the information it contains for event analysis.

19.8 MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE ON THE SITE

The requirements and responsible parties regarding the on-site management of radioactive wastes and spent fuels are specified in the Art. 5 and 9 of Law No. 7381 and Regulation on Radioactive Waste and Spent Fuel Management (2023). According to these requirements, radioactive waste and spent fuel management including on-site storage of spent fuels is carried out within the framework of a program and in accordance with the DiD principle.

The requirement to keep the amount of radioactive waste that will be generated during operation as low as reasonably achievable is mentioned in the Regulation on Specific Principles for Safety of Nuclear Power Plants (2008). For on-site spent nuclear fuel storage, provisions of Regulation on Design Principles for Safety of Nuclear Power Plants (2008) will be applied.

At the Akkuyu NPP, the safe handling of radioactive waste and spent fuel is guaranteed by a combination of design features.

According to the Art. 9 para. 7 of Law No. 7381, the spent fuels generated in the Akkuyu NPP are stored at the NPP site all through the operational life. As mentioned in the Turkish National Report for the Eight Review Meeting within the framework of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, wet-storage and dry-storage technologies are implemented at Akkuyu NPP within the framework of spent fuel handling. Spent fuel removed from the reactor core will be stored in the spent fuel pool for (wet-storage). It will then be loaded into dual-cask, and subsequently stored in on-site interim storage building (dry storage) at the Akkuyu NPP site. Both methods are designed to safely manage spent fuels that are unloaded from the reactor, minimize radioactivity and residual heat until the acceptable levels, and enable safe transportation for storage.

During the operation of the Akkuyu NPP, solid radioactive waste, liquid radioactive waste and gaseous radioactive waste will be generated. The radioactive waste management systems ensure the safe management of radioactive waste and minimize their volumes and radioactivity as low as reasonably achievable amount.

Gaseous radionuclides are collected and filtered by ventilation systems, discharged through the ventilation stack into the atmosphere up to levels authorized for release. Liquid radioactive waste is collected in the specialized tanks,

depending on their radioactivity and type, and after a certain time, is sent to the treatment systems such as evaporation and pyrolysis methods. After treatment from these systems, liquid radioactive waste is solidified by the cementation method, and is stored at the Akkuyu NPP site.

Within the scope of solid radioactive waste management at Akkuyu NPP, collection, segregation, treatment and storage procedures will be implemented. After the collection of solid radioactive waste, the segregation step is followed. As a result of segregation, the solid radioactive waste is classified into three categories: very low level, low and intermediate level, and high level.

Very low radioactive waste after compression is also stored in drums at the Akkuyu NPP site. For the safe management of low and intermediate level solid radioactive waste, low

and intermediate level waste will be classified into two groups by dose rate such as non-exceeding 1 mSv/h and exceeding 1 mSv/h. Non-exceeding 1 mSv/h low and intermediate level solid radioactive waste is treated by the incineration, compression and cementing methods and stored in the drums at the Akkuyu NPP site. Exceeding 1 mSv/h low and intermediate level solid radioactive waste is stored in special drums at the Akkuyu NPP site. High level solid radioactive waste will be stored in special capsules at the Akkuyu NPP site.

In order to minimize the radioactive waste volumes as low as reasonably achievable, in addition to these methods, metal radioactive waste is cleared by the decontamination. The Regulation on Clearance and Release of Radioactive Materials (2023) outlines the required clearance level.

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Laws, Regulations and Guides Concerning the Safety of Nuclear Installations**Law and Presidential Decrees**

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2. Presidential Decree on the Organization and Duties of the Nuclear Regulatory Authority No. 95, 2022

Regulations

1. Regulation on Safe Transport of Radioactive Material, 2005
2. Regulation on Specific Principles for Safety of Nuclear Power Plants, 2008
3. Regulation on Design Principles for Safety of Nuclear Power Plants, 2008
4. Regulation on Nuclear Power Plant Sites, 2009
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12. Regulation on Authorizations Regarding Nuclear Facilities, 2023
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17. Regulation on Liability Insurance and Guarantee Regarding Nuclear Risks, 2023
18. Regulation on Radioactive Waste and Spent Fuel Management, 2023
19. Regulation on Recording, Notification and Reporting in Nuclear Installations, 2024
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21. Regulation on the Supply Chain in Nuclear Facilities, 2024
22. Regulation on Independent Oversight Activities in Nuclear Facilities, 2024
23. Regulation on On-Site Direct Current Power Sources in Nuclear Power Plants, 2025

The above-mentioned regulations can be accessed in Turkish from the website: <https://www.ndk.org.tr/mevzuat>



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