REPUBLIC OF TURKEY

NATIONAL REPORT FOR
THE CONVENTION ON NUCLEAR SAFETY

REPORT NO: 5

A FULL REPORT TO THE FIFTH REVIEW MEETING OF NUCLEAR SAFETY CONVENTION

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TURKISH ATOMIC ENERGY AUTHORITY

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INTRODUCTION

Main national organizations involved in nuclear power project activities in Turkey are the Ministry of Energy and Natural Resources, the State Planning Organization (DPT), the Turkish Atomic Energy Authority (TAEK), the Ministry of Environment and Forestry, The Energy Market Regulatory Authority, and the Electricity Generation Corporation (EÜAŞ).

According to the current long-term energy planning studies made by the Ministry of Energy and Natural Resources, nuclear power is considered as an important option for national energy security and reliability.

Inline with its energy plans, Turkey has enacted "the Law on Construction and Operation of NPPs and Sale of Electricity" in 2007, and initiated a competition for financial support of Turkish Government for energy production from nuclear power plants to be built in Akkuyu site. However, the competition had to be terminated based on legal aspects. After the termination, Turkish Government kept the negotiations open with Russian Federation, as sole bidder of competition stage to build a NPP in Turkey.

Turkey has signed an Inter-Governmental Agreement with Russian Federation on May 12th, 2010 and ratified it in her parliament for building an NPP in Akkuyu site. The Akkuyu NPP (ANS) will be four units of VVER 1200 (AES 2006) design, to be built and operated by a Russian company established under Turkish jurisdiction. The first unit is expected to be in operation by 2018. Turkey also continues to negotiate with South Korea for possible 4 more units in Sinop site.

Meanwhile, the Turkish Government is dedicated to complete the necessary legal infrastructure on nuclear arena as soon as possible. A Nuclear Energy Law which addresses the responsibilities of all parties active in nuclear field and establishes an independent regulatory authority has been drafted, revised according to feedback received from stakeholders and finalized for submission to the legal procedures for enactment.

In this respect, TAEK continues to enhance the national regulatory structure and competence on nuclear safety. From 2008 to 2010 total of 12 regulations, updates and new ones, on nuclear safety have been issued. Several others are currently under preparation level.

TAEK has emergency preparedness and response capabilities against existing nuclear power plants close to the national territory. The RESA (Radiation Early Warning System)

continues its online operation with increasing number of stations. A laboratory has been established for environmental monitoring to observe the effects of Armenian Metzamor NPP and to analyze the samples that will be collected in case of real emergency.

Turkey has signed two more bi-lateral agreements for Early Notification of Nuclear Accidents. Currently, Turkey has such agreements with Bulgaria, Romania, Ukraine and Russia. Turkey has also initiated the ratification procedures for Joint Convention on Safety of Spent Nuclear Fuel Management and Safety of Radioactive Waste Management in early 2010.

SUMMARY

Since the fourth Review Meeting of Nuclear Safety Convention on April 2008, Turkey has issued twelve regulations or revisions regarding nuclear safety seven of them are related to nuclear power plant safety.

Turkey has ratified the signed bilateral agreement on early notification of nuclear accidents with Romania, and signed and ratified two more agreements with Ukraine and Russia.

Meanwhile, governmental decision on embarking to nuclear power has been made and an intergovernmental agreement with the Russian Federation to build four units of VVER 1200 in Akkuyu site has been signed by the government and ratified by the parliament. First application for construction license is expected in 2011.

Negotiations have been started with South Korea to explore the possibility of building APR 1400 units in Sinop site. Negotiations on intergovernmental agreement is expected to start in last quarter of 2010 and signed before 2011.

REVIEW OF THE NATIONAL STATUS

A. GENERAL PROVISIONS

EXISTING NUCLEAR INSTALLATIONS (ARTICLE 6)

Turkey has two research reactors and a pilot fuel fabrication plant on experimental level as nuclear facilities, all of which are outside the context of Nuclear Safety Convention. No nuclear power plant (NPP) is currently under construction or in operation in Turkey. However, an inter-governmental agreement is signed and ratified to construct and operate an NPP in Akkuyu Bay on the Mediterranean coast which was granted a site license for building an NPP by the regulatory body of Turkey in 1976. Important site parameters of Akkuyu Site are updated in 2009. Site investigation studies have been performed in Sinop as a prospective nuclear site.

B. LEGISLATION AND REGULATION

LEGISLATIVE AND REGULATORY FRAMEWORK (ARTICLE 7)

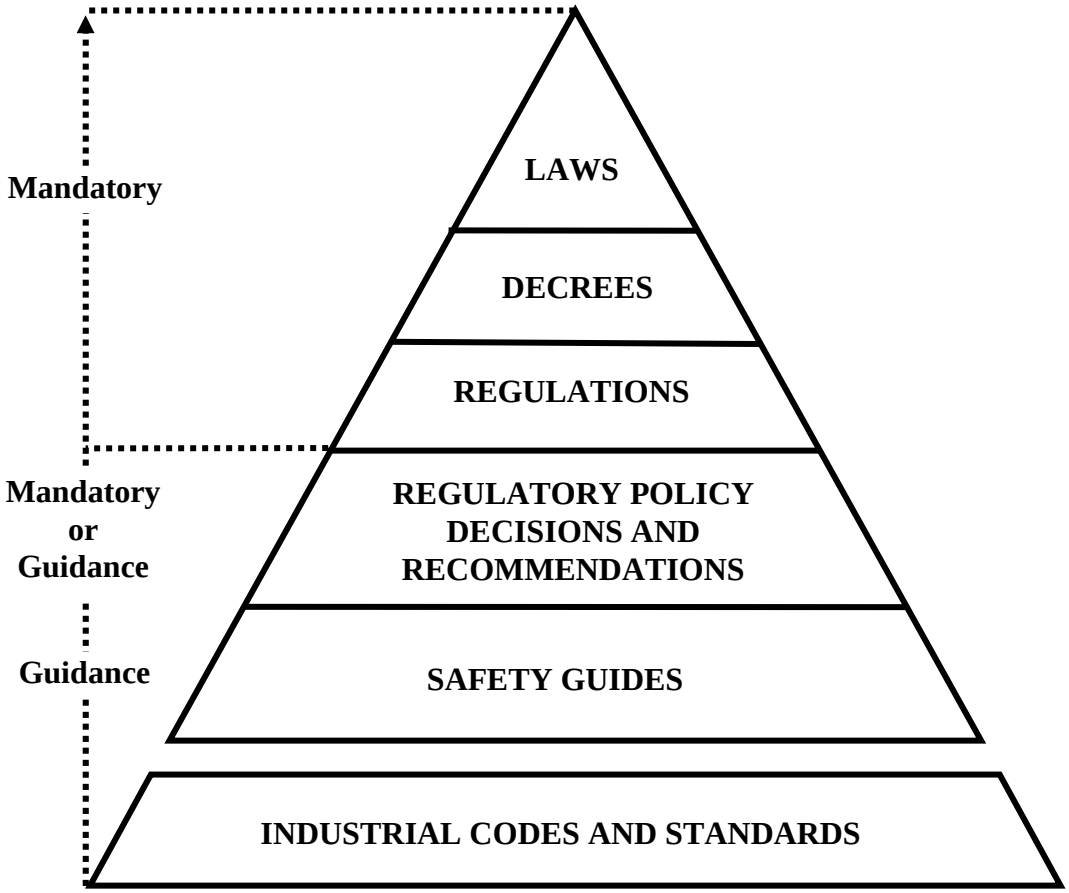
Turkish regulatory structure is composed of laws, decrees, regulations, guides and codes and standards. The hierarchical pyramid of Turkish regulatory structure is given in Figure 1.

Within this structure, the current legislative and regulatory framework of Turkey is consistent with international conventions and treaties, and IAEA safety requirements in most of the aspects of nuclear safety and security.

Turkey'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 environment. In this respect, Turkey signed and/or approved international agreements and conventions which are given in Annex I.

As a non nuclear weapon state party to the NPT, Turkey has established a system of accountancy for and control of nuclear materials based on Safeguards Agreement. Turkey has received an ISSAS mission of IAEA in June 2010 to review this system and revisions with respect to the agreement and additional protocol.

Figure 1. Regulatory Pyramid in Turkey



Turkey is also party to the Convention on Physical Protection of Special Nuclear Materials and implemented its requirements in national regulations. Current regulations are under revision to introduce latest changes to these systems.

The main Turkish legislative framework regulating nuclear installations consists of the "Law on Turkish Atomic Energy Authority" regarding nuclear safety, security and radiation protection; the "Environmental Law" regarding environmental impact of these facilities; the "Penal Law", which also defines nuclear and radiological crimes and penalties; and the "Law on Electricity Market" regarding electricity production licenses. There are several other regulatory bodies such as Ministry of Health, Ministry of Transportation, etc., which indirectly regulates an NPP as an industrial facility.

Regarding nuclear safety and radiation protection, there is the "Decree on Licensing of Nuclear Installations", which lays out the rules and procedures for licensing of nuclear installations.

Further details on safety principles are addressed in regulations. There are currently 14 regulations directly or indirectly addressing safety of nuclear power plants, and five more for other nuclear installations. The list of the laws, decrees, regulations and guides that are relevant to the nuclear power plants is given in Annex II.

Another important regulatory document is the “Directive on Principles of Licensing of Nuclear Power Plants”, which lays out the rules for establishing a licensing basis for nuclear power plants. These rules state that the issues that need further clarification than existing Turkish regulations on nuclear safety are covered by requiring compliance of the owner/operator with the IAEA safety documents, particularly, safety fundamentals and safety requirements. For remaining issues, vendor country or other third party country laws, regulations, codes and standards are referenced. The directive also requires the applicant to submit the regulatory body a reference plant of the proposed design for facilitating the licensing process.

Rules and procedures related to the licensing of nuclear installations are laid out in the “Decree on Licensing of Nuclear Installations”, entered into force in 1983. The decree defines permits and licenses to be obtained, requirements for applications to these permits and licenses, including lists of documents to be submitted, review and assessment procedures, the authorizing entities within Turkish Atomic Energy Authority (TAEK) for each authorization, approval mechanisms for modifications during construction and operation, and authorizes TAEK for inspecting the installations throughout their lifetime and enforcing penalties such as limiting, suspending and revoking the licenses.

General safety objectives and safety principles related to safety culture, management systems, defense-in-depth, proven engineering practices, human factors, radioactive waste and decommissioning considerations, as described in IAEA documents SF1, GS R-1, GS R-3 and INSAG-12, are addressed in a draft “Regulation on Nuclear Installation Safety”. TAEK law, the decree, directive and this draft regulation constitute the basis of the legal framework of safety of nuclear installations in Turkey.

Rules and procedures for accounting for and control of nuclear materials are described in the “Regulation on Accounting for and Control of Nuclear Materials”, which satisfy the requirements of the Safeguards Agreement with the IAEA. This regulation is under revision for ensuring compliance with the additional protocol. The national aspects of Convention on

Physical Protection of Nuclear Material have been implemented in the “Regulation on Physical Protection Measures of Special Nuclear Materials”. This regulation is under revision for ensuring the compliance with INFCIRC 225/Rev. 4.

There are further regulations that are associated with nuclear safety of different types of nuclear installations. Suitability of nuclear power plant (NPP) sites is addressed in the “Regulation on Nuclear Power Plant Sites”. Basic requirements on design of an NPP are laid out in the “Regulation on Design Principles for Safety of Nuclear Power Plants” and on construction, commissioning, operation and decommissioning of an NPP in the “Regulation on Specific Principles for Safety of Nuclear Power Plants”.

Emergencies are covered in the “Regulation on National Practices during Nuclear and Radiological Emergencies”. However, this regulation only covers the roles and responsibilities of governmental authorities in case of an emergency. For requirements on emergency preparedness and response, IAEA Safety Requirement GS R-2 is addressed.

There are more regulations in draft form to cover radiation protection, operating personnel qualification and licensing, and radioactive waste management in nuclear installations.

In Turkey, nuclear installations are licensed by TAEK regarding nuclear safety and security, and radiation protection issues.

Licensing procedure for an NPP had been laid out in the Decree on Licensing of Nuclear Installations, and initiated by the application of the owner to be recognized as such. Licensing process for a nuclear power plant comprises three main stages in succession, Site License, Construction License and Operating License. There are several other permits functioning as hold points during the licensing process. Among those are limited work permit, commissioning permit, permit to bring fuel to site, fuel loading and test operations permit for operating license, etc. For each authorization, the necessary documents for review and assessment of TAEK are defined in the Decree.

Decree also requires the owner to apply for authorization of TAEK for every modification that may have an impact on safety of nuclear installation.

It is explicitly declared in the Decree on Licensing of Nuclear Installations that nuclear installations cannot be operated without a valid license. The Penal Law defines operating a nuclear installation without a valid license as a felony, punishable by imprisonment.

In addition, NPPs should obtain an affirmative decision on environmental impact assessment according to the “Regulation on Environmental Impact Assessment” from the Ministry of Environment and Forestry (MEF) as a prerequisite to the site license and an electricity production license from the Energy Market Regulatory Authority.

Regulatory inspection and enforcement activities cover all areas of lifetime of a nuclear installation. Inspection of TAEK does not relieve the authorized person/organization of its responsibility for ensuring nuclear safety.

The main philosophy for the regulatory inspection is “Trust and Verify”. This is achieved by planning the overall approach in scope and content of the inspection to be conducted, not only to the authorized organization but also to its contractor and supplier chains.

TAEK conducts inspections to satisfy itself that the authorized organization is in compliance with the conditions set out in the authorization or regulations, based on the “Regulation on Nuclear Safety Inspections and Enforcement”. Enforcement actions may be taken as necessary by TAEK in the event of deviations from, or non-compliance with, conditions and requirements.

Regulatory inspection includes a range of planned and reactive inspections over the lifetime of a nuclear installation and inspections of other relevant parts of the operator’s organization and contractors/suppliers to ensure compliance with regulatory 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 stages of the installation. In addition to TAEK staff, outside local or foreign services may be procured for specific inspection tasks for the purpose of pre-evaluation and obtaining data where necessary.

The Decree on Licensing of Nuclear Installations authorizes TAEK to grant, decline, limit the scope, suspend and revoke the licenses. TAEK may put a formal request to the Prime Minister to close down a nuclear installation.

In case of regulation violations, TAEK takes into account importance, urgency and seriousness of the violations in regard to nuclear safety for the imposed enforcement.

All decisions and actions by TAEK may be challenged by any interested party through the legal system of Turkey.

REGULATORY BODY (ARTICLE 8)

Regulatory body of Turkey is the Turkish Atomic Energy Authority (TAEK), which undertakes all the regulatory activities concerning nuclear and radiation safety together with the coordination and support of research and development activities in nuclear field.

TAEK was established by the Law on Turkish Atomic Energy Authority as a government body reporting to the Prime Minister. TAEK has been affiliated with the Ministry of Energy and Natural Resources (MENR) since 2002. An independent regulatory body in compliance with international standards has been envisaged in draft Nuclear Energy Law.

TAEK is responsible for defining safety measures for all nuclear activities and for drawing up regulations concerning radiation protection and the licensing and safety of nuclear installations.

More specifically, TAEK is responsible for the following:

- Formulating the general policy and relevant programmes on peaceful use of nuclear energy and submitting to the Prime Minister for approval,
- Carrying out and/or coordinating research on nuclear energy applications to support scientific, technical and economic development of Turkey,
- Issuing licenses to private and state enterprises conducting various activities involving radioactive materials, supervising such enterprises from the radiological safety standpoint, and ensuring that licensing conditions are complied with,
- Issuing approvals, permits and licenses for siting, construction, operation and decommissioning of nuclear power and research reactors and nuclear fuel cycle facilities,
- Performing review, assessment and inspection,
- Granting, declining, limiting the scope, suspending and revoking licenses and putting a formal request to the Prime Minister to close down a nuclear installation,
- Drafting rules and regulations related to nuclear and radiation safety,
- Ensuring the safe transport, processing, storage and disposal of radioactive waste produced by nuclear installations and radioisotope laboratories, and

- Training the personnel for the nuclear sector.

TAEK is headed by a president, assisted by three vice presidents, who are appointed by the President of the Republic of Turkey. The administrative organs of TAEK include the Atomic Energy Commission, the Advisory Council, specialized technical and administrative departments and research centers.

The Atomic Energy Commission (AEC), under the chairmanship of the President of the Turkish Atomic Energy Authority, consists of the Vice Presidents, one member from each of the Ministries of National Defense, Foreign Affairs, Energy and Natural Resources and of four faculty members in the field of nuclear energy. Duties of AEC are:

- To set the working principles and programs of TAEK, to approve the draft budget for submittal to the Prime Minister,
- To draft and submit to the Prime Minister laws, decrees and regulations related to nuclear field, and
- To observe and evaluate the studies of TAEK, to submit the annual work program and annual work report to the Prime Minister.

AEC also acts as a decision making body for licenses and some of the permits for nuclear installations.

The Advisory Council consists of faculty members working in the nuclear field and experts from other related institutions and bodies, and meets upon invitation. The members of the Advisory Council are appointed with the nomination of the AEC and approval of the Prime Minister. The Council is invited to meet at least once a year by the President of the TAEK who presides the meeting. The Advisory Council comments on the subjects addressed by the AEC.

TAEK's main organization consists of four technical and one administrative department:

- Nuclear Safety Department (regulatory activities in nuclear safety and security),
- Radiological Health and Safety Department (regulatory activities in radiation, transport and waste safety),
- Technology Department (technological development in nuclear field),

- Research, Development and Coordination Department (coordination of all kind of activities in nuclear field), and
- Administrative and Financial Affairs Department (administrative and financial activities of TAEK).

Main responsibilities of Nuclear Safety Department are the licensing of nuclear installations (review and assessment of documentation related to nuclear safety), preparation and amendment of regulations and inspection of nuclear installations. In case of need, assistance from a technical support organization may be sought during licensing of a NPP.

Nuclear installation licensing responsibilities are shared among Nuclear Safety Department and the Advisory Committee on Nuclear Safety (ACNS). ACNS is established and its main responsibilities are defined in the "Decree on Licensing of Nuclear Installations". The members of ACNS are faculty members and experts working in relevant fields. ACNS performs an independent review of the documents submitted with license applications.

Nuclear Safety Department of TAEK has maintained its human and financial resources at a level based on adequacy for regulatory supervision over existing nuclear installations. In 2010 human resources of Department has been increased to 31 technical staff with a more than 60% increase.

RESPONSIBILITY OF THE LICENSE HOLDER (ARTICLE 9)

Prime responsibility for the safety of a nuclear installation is on the holder of the relevant license. This responsibility is implied in the Decree on Licensing of Nuclear Installations and explicitly stated in the draft "Regulation on Nuclear Installation Safety" and explicitly stated in draft Nuclear Energy Law.

The license holder arranges its organization and distribution of responsibilities according to the "Regulation on Basic Requirements on Quality Management for the Safety of Nuclear Installations". This regulation covers all the stages during the lifetime of a nuclear installation.

TAEK ensures that the license holder discharges its prime responsibility for safety through review, assessment, audit and inspections.

C. GENERAL SAFETY CONSIDERATIONS

PRIORITY TO SAFETY (ARTICLE 10)

The main mission of TAEK is to ensure that the use of nuclear energy in Turkey does not pose undue risk to human health and the environment. Basic tools for realization of this mission are the national and international regulations. The national regulations are mainly based on IAEA safety requirements, standards and guides and international experiences, giving high priority to the safety. For issues not covered by national regulations TAEK uses IAEA safety requirements.

TAEK achieves regulatory control of nuclear facilities and nuclear materials through a comprehensive licensing system. TAEK's licensing system assures that nuclear facilities and nuclear items are utilized with proper consideration for health, safety, security and protection of people and the environment.

FINANCIAL AND HUMAN RESOURCES (ARTICLE 11)

According to the provisions of the Decree on Licensing of Nuclear Installations, the owner submits documented proof of its technical and financial abilities with its application for recognition as a qualified applicant. At later stages, TAEK may review financial documents depending on safety concerns. Safety improvements are financed by the owner.

To provide financial measures for the management of radioactive waste and decommissioning, National Radioactive Waste Fund and Decommissioning Fund are established by the Law on Construction and Operation of NPPs and Sale of Electricity.

The operating organization responsibilities, human resource management issues, and training of operating organization are detailed in the "Regulation on Specific Principles for Safety of Nuclear Power Plants". The Licensee has the prime responsibility for ensuring that the employees are qualified and have the necessary authority to perform their jobs. The Licensee shall employ an adequate number of competent and experienced personnel throughout the entire life of the plant in order to ensure safe operation.

According to Inter-Governmental Agreement (IGA) between Turkey and Russian Federation, there will be on-site full scope simulators for training of operating personnel.

HUMAN FACTORS (ARTICLE 12)

The draft “Regulation on Nuclear Installation Safety” requires that human factors are taken into consideration in all safety related activities and that only trained and qualified personnel are employed in nuclear installations.

QUALITY ASSURANCE (ARTICLE 13)

The basic requirements outlined in the “Regulation on Basic Requirements on Quality Management for the Safety of Nuclear Installations” are similar to the requirements of the IAEA Safety Series 50-C-Q – Code Quality Assurance for Safety of Nuclear Power Plants and Other Nuclear Installations. The basic requirements of the Code are used as the foundation for the regulation and enhanced by the terminology and principles of the ISO 9001 Quality Management System (QMS)-Requirements Standard-2000.

The main criterion for the quality management system is the effective use of the process improvement approach by the authorized organization, and its contractors/suppliers chain.

TAEK requires a configuration management system to be established as per the requirements of ISO 10007:2003 Quality Management Systems- Guidelines for Configuration Management Standard.

The quality and configuration management manuals and plans for each unit of nuclear installation are to be produced for all stages combined as well as for each single stage and are subject to approval by TAEK. All related QMS documentation is to be submitted for review or information.

The quality grading methodology as well as safety and quality classification lists have to be submitted together with the quality manual.

The applicant has to commit in the relevant chapter of the safety analysis report that basic requirements of quality management stated in the regulation are fully complied with and has to demonstrate that the requirements are fulfilled.

During the review and assessment of the submitted quality management documentation, if any non-conformances, deviations and inadequacies are determined, the permit or license application could be suspended. If any non-conformances or deviations are determined during the regulatory quality inspections, the works may be stopped by TAEK unless corrective and

preventive actions are taken by the responsible organization which carries out the quality management activities for the related stage of the nuclear facility.

TAEK evaluates the importance, urgency and seriousness of the violation of the regulation from the safety point of view in decisions taken for managerial enforcement actions.

ASSESSMENT AND VERIFICATION OF SAFETY (ARTICLE 14)

Rules, procedures and documents to be submitted for assessment of safety during licensing are described in detail in the provisions of the Decree on Licensing of Nuclear Installations. TAEK may request further information related to safety for review and assessment whenever necessary.

A site report containing information on a potential site for a nuclear installation is submitted and evaluated before a site license is granted. A preliminary safety analysis report and a final safety analysis report, together with supporting documents, are submitted with application to construction license and operating license, respectively. These documents are evaluated by Nuclear Safety Department and Advisory Committee on Nuclear Safety. Evaluation results are reviewed by the Atomic Energy Commission for granting a license.

RADIATION PROTECTION (ARTICLE 15)

The radiation protection issues has been addressed in the “Regulation on Radiation Safety” in which the provisions are in place for principles of radiation protection, dose limits for public, workers, etc., together with the provisions on radiation safety. However, this regulation is applicable by definition only in radiation applications. To address this shortcoming, a “Decree on Radiation Protection” has been drafted based on EU directive of 96/29 and BSS115 of IAEA, to establish a common framework of radiation protection for all safety areas. Draft is at the stage of receiving feedbacks from relevant governmental organizations.

Beside the decree on radiation protection, a regulation on radiation protection in nuclear installations is being drafted to address detailed issues of radiation protection in nuclear field.

EMERGENCY PREPAREDNESS (ARTICLE 16)

Accidents and other emergencies are addressed in the “Regulation on Specific Principles for Safety of Nuclear Power Plants”. Each NPP is required to have an approved

emergency plan and perform periodic exercises and to establish on-site emergency centers. Management procedures for severe accidents are also needed to be in place and operating personnel needed to be trained in their implementation.

TAEK has an Emergency Response Plan to be used in the event of a nuclear accident or radiological emergency. Since Turkey has no NPPs at present, the plan is only for off-site emergencies. Preparations and actions to be taken during emergencies are described in the "Regulation on National Practices during Nuclear and Radiological Emergencies". Disaster and Emergency Management Presidency, a government agency reporting to the Prime Minister, is established in 2009 for management of natural and man-made disasters and emergencies at the national level.

Emergency plan is activated with the initial notification of the emergency and deactivated when all government agencies have completed their response. TAEK is the Lead Technical Agency and coordinates all the radiological aspects of the governmental response. Emergency organization, emergency preparedness activities, and protective measures are stated in this plan.

The national plan is predicated on the premise that public information coordination is the most effective when all relevant information sources participate jointly. Joint information system systematically links all public information sources from the national, local, and regional authorities and even from the relevant private companies to one main location, to provide a mechanism for collecting and sharing the data and information, and centrally releasing to the media. In case of a nuclear and/or radiological emergency TAEK will be the main location for gathering and releasing information on emergency. TAEK, as representative of Turkey, will also inform the Bulgaria, Ukraine, Romania and Russia about emergency regarding bilateral agreements on early notification and IAEA regarding Early Notification Convention.

According to the emergency plan exercises are performed for at least once every two years. TAEK is responsible for training the related personnel with the cooperation of relevant ministries and organizations.

The Early Warning Environmental Radiation Monitoring System, designed and assembled by TAEK, is in operation with 99 on-line stations at present. TAEK participates on a voluntary basis in EURDEP (EUropean Radiological Data Exchange Platform), which is regulated by the EU Council Decision 87/600 and the Recommendation 2000/473/EURATOM.

ECURIE (European Community Urgent Radiological Information Exchange) agreement was signed by the EC and TAEK on 26 July 2005. The agreement is to be ratified. After ratification CODECS system will be installed for the ECURIE purposes.

Due to closeness of the location of the Armenian NPP to the eastern border of Turkey, some areas in the region is considered as places where urgent protective measures are to be taken during an accident at this NPP. In order to facilitate the protective actions and for routine and non-routine measurements of the gamma radioactivity in the air, water, soil, feedstuff and foodstuff samples taken from the region, a dedicated laboratory has been established at Kafkas University, located in the region, in 2005.

D. SAFETY OF INSTALLATIONS

SITING (ARTICLE 17)

"Regulation on Nuclear Power Plant Sites", "Regulation on Specific Principles for Safety of Nuclear Power Plants" and the draft "Regulation on Nuclear Installation Safety" require that the site of a nuclear installation is determined by taking into account the effect of the site to the NPP, the effect of the NPP to the site and the applicability of the emergency plans.

According to the "Regulation on Specific Principles for Safety of Nuclear Power Plants", suitability of the site is determined according to the assessment of the radiological impact during normal operation and accident conditions on individuals, society and environment through all possible transport pathways through detailed site investigations. Applicability of emergency plans is also evaluated and planning zones are determined accordingly. Details are given in the "Regulation on Nuclear Power Plant Sites".

The draft "Regulation on Nuclear Installation Safety" requires surveillance and re-evaluation to be performed to ensure continued acceptability of site conditions. Since the site license was granted to the Akkuyu site in 1976, necessary information on the site were updated in 2009, including on-site meteorological measurements, environmental monitoring, and flora-fauna survey and studies for seawater hydrology, cooling water discharge and external human induced events.

DESIGN AND CONSTRUCTION (ARTICLE 18)

The “Regulation on Design Principles for Safety of Nuclear Power Plants” focuses on design issues for ensuring safety of nuclear power plants. Similarly, “Regulation on Specific Principles for Safety of Nuclear Power Plants” addresses construction issues for nuclear power plants.

The regulation on design principles requires that the proven technologies, defense in depth, radiation protection, waste production, operational concerns, decommissioning and other similar issues are to be taken into account in design of an NPP.

For the construction of nuclear power plants, 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”.

OPERATION (ARTICLE 19)

Safety aspects of commissioning and operation of nuclear installations and specifically nuclear power plants are handled in draft “Regulation on Nuclear Installation Safety” and “Regulation on Specific Principles for Safety of Nuclear Power Plants”. Commissioning of an NPP requires permit from TAEK as it was stated in the “Decree on Licensing of Nuclear Installations”. While basic principles for assurance of nuclear safety in commissioning and operation are stated in the draft “Regulation on Nuclear Installation Safety”, details of requirements are laid out in the “Regulation on Specific Principles for Safety of Nuclear Power Plants”.

The draft “Regulation on Nuclear Installation Safety” specifies the requirement on operational limits and conditions to ensure safe operation under normal operation and anticipated operational conditions. According to the “Decree on Licensing of Nuclear Installations” any changes to operational limits and conditions are subject to approval of TAEK.

The “Regulation on Specific Principles for Safety of Nuclear Power Plants” states that the installation is to be operated according to approved hierarchical procedures which need to be updated regularly. Regulatory requirements for operation, maintenance, inspection and testing of a nuclear installation are also specified in this regulation. The activities are performed

in the framework of a program, which is supported by a quality management system and subject to approval of TAEK.

On the other hand, principles and rules of conduct for operational procedures, their implementation, periodic review, modification, approval and documentation are stated in the "Regulation on Basic Requirements on Quality Management for the Safety of Nuclear Installations".

Abnormal events, which include incidents significant to safety, are notified to TAEK according to the "Regulation on Specific Principles for Safety of Nuclear Power Plants". A draft regulation is planned for notification and reporting procedures for NPP.

The "Regulation on Specific Principles for Safety of Nuclear Power Plants" requires the operator to have a technical team for necessary engineering and technical support during modifications, repairs and special tests to assist itself for safe operation. This regulation also requires the operator to compile and analyze the operational experience and share and make use of the lessons-learned within the framework of a program.

Safe management of radioactive waste and spent fuel has been addressed as a requirement in the draft "Regulation on Nuclear Installation Safety", putting an emphasis on keeping the radioactivity and volume of waste produced as low as reasonably achievable within the framework of a program. A regulation is under drafting stage for further clarification of radioactive waste and spent fuel management issues and for laying out detailed requirements for safe management.

ANNEX I

Multilateral Conventions, Treaties and Bilateral Agreements of Turkey

1. Convention on Nuclear Safety, 1994
2. Paris Convention on Third Party Liability in the Field of Nuclear Energy (29 July 1960), 1961
    a. Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960 (28 January 1964), 1967
    b. Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as Amended by the Additional Protocol of 28 January 1964 (16 November 1982), 1984
3. Treaty on the Non Proliferation of Nuclear Weapons (NPT), 1979
4. Agreement Between the Government of the Republic of Turkey and the IAEA for the Application of Safeguards in Connection with NPT, 1981
    a. Protocol Additional to the Agreement Between the Government of the Republic of Turkey and the IAEA for the Application of Safeguards in Connection with NPT, 2001
5. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, 1990
6. Convention on Early Notification of a Nuclear Accident, 1990
7. Convention on the Physical Protection of Nuclear Material, 1986
8. Comprehensive Test Ban Treaty, 1999
9. Agreement Between the Government of Canada and the Government of the Republic of Turkey for Co-operation in the Peaceful Uses of Nuclear Energy, 1986
10. Agreement Between the Government of the Republic of Turkey and the Government of Argentine Republic for Co-operation in the Peaceful Uses of Nuclear Energy, 1992
11. Agreement Between the Government of Korea and the Government of the Republic of Turkey for Co-operation in the Peaceful Uses of Nuclear Energy, 1999
12. Agreement Between the Government of French Republic and the Government of the Republic of Turkey for Co-operation in the Peaceful Uses of Nuclear Energy, 2004
13. Agreement for Cooperation Between the Republic of Turkey and the United States of America Concerning Peaceful Uses of Nuclear Energy, 2006
14. Memorandum of Understanding for Technical Cooperation and Exchange of Information in Nuclear Regulatory Matters Between Turkish Atomic Energy Authority and the State Nuclear Regulatory Committee of Ukraine, 2008
15. Agreement Between the Government of the Republic of Turkey and the Cabinet of Ministers of Ukraine on Early Notification of a Nuclear Accident and Exchange of Information on Nuclear Facilities, 2001

16. Agreement Between the Government of the Republic of Turkey and the Government of the Republic of Bulgaria on Early Notification of a Nuclear Accident and on Exchange of Information on Nuclear Facilities, 1997
17. Agreement Between the Government of the Republic of Turkey and the Government of Romania on Early Notification of a Nuclear Accident, 2008
18. Agreement Between the Government of the Republic of Turkey and the Government of the Russian Federation for Cooperation in the Use of Nuclear Energy for Peaceful Purposes, 2009
19. Agreement Between the Government of the Republic of Turkey and the Government of the Russian Federation on Early Notification of a Nuclear Accident and Exchange of Information on Nuclear Facilities, 2009

ANNEX II

Laws, Decrees, Regulations and Guides Concerning the Safety of Nuclear Installations

Laws

1. Law on Turkish Atomic Energy Authority, 1982
2. Environmental Law, 1983

Decrees

1. Decree on Licensing of Nuclear Installations, 1983

Regulations

1. Regulation on Physical Protection Measures of Special Nuclear Materials, 1979, (Under Revision)
2. Regulation on Working Procedures of Atomic Energy Commission, 1983
3. Regulation on the Establishment and Working Procedures of Advisory Committee on Nuclear Safety, 1997
4. Regulation on Safe Transport of Radioactive Materials, 1997, *(IAEA TS R-1)*
5. Regulation on Accounting for and Control of Nuclear Materials, 1997, (Under Revision)
6. Regulation on Radiation Safety, 2000, *(BSS-115) (Rev'd 2010)*
7. Regulation on National Practices during Nuclear and Radiological Emergencies, 2000
8. Regulation on Nuclear Safety Inspections and Enforcement, 2007 *(GS G-1.3)* (Rev'd 2008)
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