

THE PRESENT STATUS OF SAFEGUARDS IN TURKEY

Ayhan YILMAZER, Aysun YÜCEL

TAEK, Nuclear Safety Dept. Nuclear Material Safety Division, Nuclear Safety Dept. Nuclear Material Safety Division

ABSTRACT

Republic of Turkey signed Non-Proliferation Treaty (NPT) in Vienna, Austria on January 28, 1969 and the Treaty was ratified by Turkish Parliament on March 29, 1979. International Atomic Energy Agency (IAEA) and Republic of Turkey signed the Safeguards Agreement on June 30, 1981. Turkey accepted the international safeguards administered by IAEA and at the same time its subsidiary arrangements and Facility attachments were enforced for all nuclear facilities as an Non-Nuclear-Weapon State party to NPT. Regulation on Nuclear Materials Accounting and Control, which was prepared in accordance with Agreement Between the Government of Turkey and IAEA for the application of Safeguard in Connection with the Treaty on NPT, has been put into force since it was published in Official Gazette on September 10, 1997.

This study presents the essential futures of national system of accounting for and control of nuclear materials in Turkey.

INTRODUCTION

The Republic of Turkey signed Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on January 28, 1969 and the Treaty was ratified by the Turkish Parliament on March 29, 1979. After ratifying the NPT, the Republic of Turkey signed a Safeguards Agreement with IAEA for the application of safeguards in connection with the NPT, on June 31, 1981. Effective September 1, 1981 Turkey accepted the international safeguards administered by IAEA and at the same time its subsidiary arrangements and facility attachments were enforced for all nuclear facilities as a Non-Weapon State party to the NPT.

AUTHORITY AND RESPONSIBLE ORGANIZATION

The regulatory activities regarding nuclear, radioactive materials and facilities including nuclear material accountancy and control, and physical protection of nuclear materials is under supervision of Turkish Atomic Energy Authority (TAEA) in Turkey.

TAEA was established by the Act No.2690 of 9th July 1982 and replaced the Turkish Atomic Energy Commission created by the Act No.6821 in 1956. TAEA's general objective is to promote the peaceful uses of nuclear energy under the energy development plans approved by the Turkish Government and the application of nuclear techniques.

NATIONAL AND INTERNATIONAL SOURCES OF REGULATIONS FOR SAFEGUARDS.

International Agreements and Acts

Regulatory Pyramid that explains the order of priority of application for nuclear regulations in Turkey is shown in Figure-1.

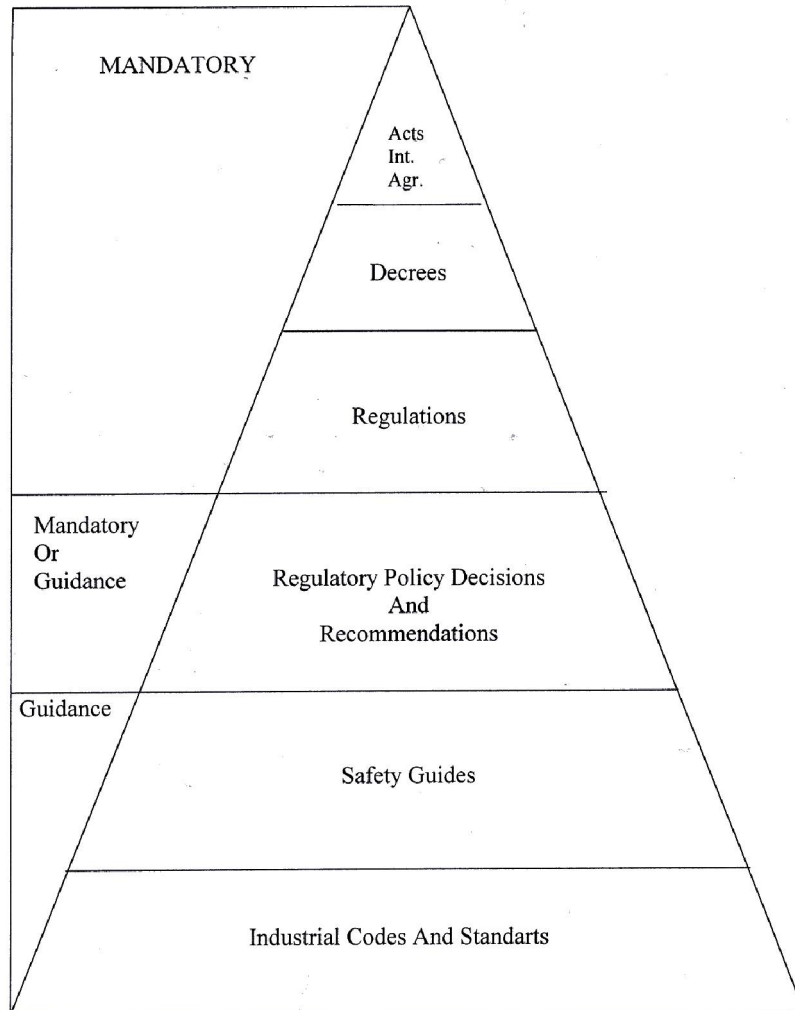


Figure-1 : Regulatory Pyramid in Turkey

NPT and Safeguards Agreement

The NPT was signed in 1968 and ratified by Turkish Parliament in 1979. Under this Treaty, Turkey negotiated and concluded with IAEA a Safeguards Agreement (INFCIRC/153 type) in 1981. According to this Agreement, Turkey has accepted IAEA safeguards on all nuclear

materials in all peaceful nuclear activities within its territory and has also accepted to establish and maintain its own “National Accounting and Control System” for all nuclear materials subject to safeguards under this Agreement.

Convention on Physical Protection of Nuclear Materials

Besides NPT, Turkey signed the Convention on Physical Protection of Nuclear Materials in 1983 and ratified in 1984.

TAEA Act

TAEA was established by this Act in 1982. The Act, under its present form, authorize TAEA to carry out the activities connected with the fulfillment of Turkey’s obligations arising from international treaties and agreements in the field of safeguards and physical protection. Article 1 of this Act reaffirms Turkey’s attachment to the peaceful use of atomic energy in conformity with the NPT and the Safeguards Agreement.

Decrees

Decree on Pertaining to Issue of Licenses for Nuclear Installations

This Decree was entered into force in 1983. It sets the rules to issue the licenses for nuclear installations and defines licensing procedures.

Decree on Radiation Safety

This Decree was entered into force in 1983. It sets the rules to issue the licenses for radioactive materials, fissile materials and equipment emitting ionizing radiation.

Regulations

TAEA has prepared the necessary regulations to ensure that the requirements for nuclear material’s safeguards and those in obligations entered into by the State in International Agreements are met throughout Turkey.

Regulation on Accounting for and Control of Nuclear Materials

This regulation has been issued in 1997. The regulation specifies the basis of related to nuclear materials accountancy and control (reports, records, notifications, inspections, etc.).

Regulation on Measures on Physical Protection of Special Nuclear Materials

This regulation was entered into force in 1979. It is based on the IAEA recommendation on Physical Protection of Nuclear Materials (INFCIRC/225/Rev 1) and specifies the basis related to the measures for physical protection of special nuclear materials in use, transit and storage and also physical protection of nuclear facilities where the special nuclear materials in use and storage.

Regulation on Safe Transport of Radioactive Materials

This regulation has been prepared based on IAEA Guide on Regulation for Safe Transport of Radioactive Materials, Safety Series No.6 and issued in 1997.

STATE SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIALS IN TURKEY

STRUCTURE

As described above, under the law and relevant regulations, TAEA is responsible for safeguard activities in Turkey (Figure-2). The Department of Nuclear Safety, which is one of the specialized technical departments, was established under TAEA in 1973, as the central organization to conduct the respective roles on licensing and safety of nuclear installations. Among its other activities this department is responsible for the accountancy and control and physical protection of nuclear materials.

After signing the Safeguards Agreement with the IAEA, Nuclear Material Safety Division (NMSD) was established under the Nuclear Safety Department in 1981 and was given the responsibility for establishing and maintaining the Turkey's SSAC, including independent verification of all nuclear materials. In the same year, SSAC was designed based on IAEA document "Guidelines for SSAC, IAEA/SG/INF/2" to meet Turkey's obligations arising from Safeguards Agreement.

The objective of this national system is to account of nuclear materials in state, to contribute to the detection of losses or unauthorized use or removal of nuclear materials and to provide the essential basis for the application of IAEA safeguards.

SSAC Information System

An information system among the facility operators, the Authority and IAEA has been established in the SSAC. The collected and recorded information related to nuclear materials are evaluated by the national system and provided to the IAEA taking into account the requirements of the Safeguards Agreement.

NMSD is responsible for collecting and maintenance of all accountancy data and other information relevant to nuclear materials balance and movements between MBA-s and from to the country. This documentation is on the periodical information and reports from the facility operators as well as on results of inspections performed by both the inspectors from IAEA and NMSD of TAEA. The Division cooperates with the IAEA Department of Safeguards and provides all ICR, PIL, MBR and other reports prepared by the facility operators to IAEA.

Accounting System

Each potential user of nuclear materials is obliged to organize the internal system of nuclear materials accountancy and control and specify its all internal accountancy documents and control procedures and chief accountant of nuclear material. Such documents have to be

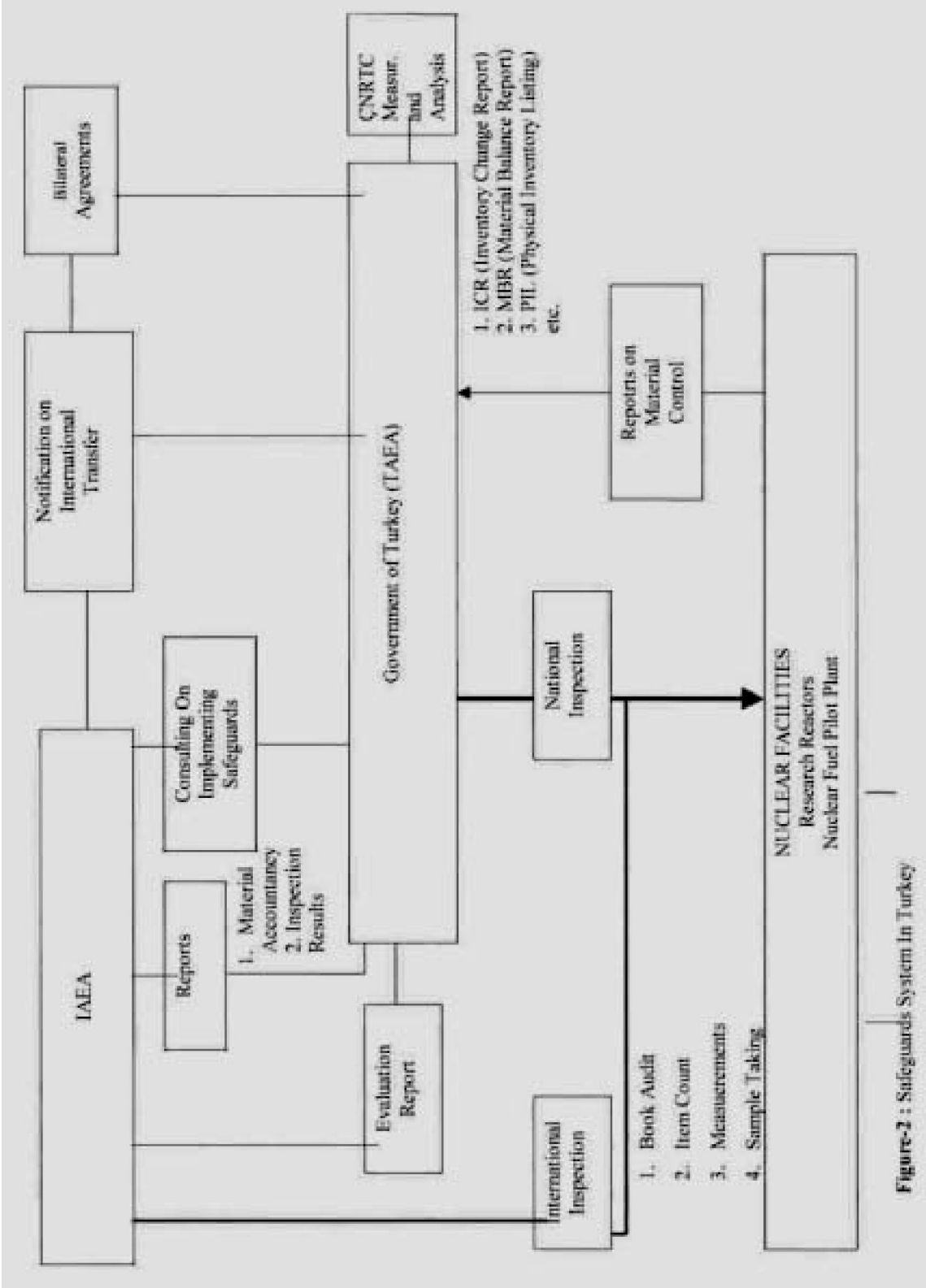


Figure-2 : Safeguards System In Turkey

prepared before nuclear material has been transported to the facility or location outside facility and are subject to the approval of TAEA after its verification by NMSD.

Advance notification on the foreseen import/export or transfers between MBAs of nuclear materials should be sent to TAEA by importer or exporter in advance. Each receipt of nuclear materials should be reported to TAEA within 2 weeks.

Facility operators should keep accounting reports such as inventory records of nuclear material origin, general ledger, records of inventory change results of measurements, etc. and also operating records for each MBA. According to these records, facility operators should submit accounting reports and special reports of nuclear material to TAEA when required. They must submit ICR by within 15 days wherever the inventory change occurs. They should also submit the PIL and MBR within 10 days after the physical inventory taking.

The role of NMSD is to examine and verify the accounting data and the other information provided by the facility operators and to submit the reports to IAEA.

When the physical and chemical operations are necessary in a manner that the first state of nuclear material can be changed, the facility operators should apply to TAEA for its permission at least 4 weeks in advance.

INSPECTIONS

Inspection of nuclear facilities in Turkey is carried out by TAEA and IAEA.

TAEA Inspections

TAEA inspection activities concentrate on the:

- Control of the presence of nuclear material and verification of completeness and correctness of the nuclear material accountancy documents at the facilities.
- Control if the facility operators meet the requirements and principles of nuclear materials accountancy and control according to the approved safeguards system at the facility.

There are 2 types of safeguards inspection, which are performed by TAEA:

1) Routine Inspections can be divided into two categories ; verification of the accountancy data and Physical Inventory Verification (PIV). These inspections are performed in order to :

- Verify that reports are consistent with reports
- Verify the location, identity, quantity and composition of nuclear materials,
- Verify information on the causes of MUF, shipper/receiver differences and uncertainties in the book inventory.

Physical Inventory Verification is performed to verify the physical inventory of nuclear material after the Physical Inventory Taking.

2) **Special Inspections** would be performed in the case of unusual events, such as unauthorized movement or loss of nuclear materials or destroy of the special seals pertaining to TAEA or IAEA.

IAEA Inspections

IAEA inspectors carry out the inspections pursuant to Safeguards Agreement. State inspector observes IAEA inspection activities.

Measurement and Analysis System

Nuclear material measurement and analysis in regarding to accounting for and control of nuclear materials for TAEA needs are carried out by the Çekmece Nuclear Research and Training Center's Laboratories.

Non-Destructive Assays

The quantity of nuclear material and the mix ratio of the element or isotope is measured with non-destructive assay (NDA) method. This method consists of a passive assay for natural emission of gamma rays and neutrons and an active assay for the measurement of induced emission.

Sampling and Analysis

Powder samples of nuclear materials can be analyzed by direct sampling to determine the ratio of Uranium and Plutonium in sample and isotopic ratio.

SAFEGUARDS ACTIVITIES AT NUCLEAR FACILITIES OF TURKEY

Turkey has three nuclear facilities and corresponding MBAs for each facility as following:

- MBA/TR-A: TR-2 Research Reactor
- MBA/TR-B : Triga Mark II Research Reactor :
- MBA/TR-C : Nuclear Fuel Pilot Plant :

Since 1981 these research reactors are under the IAEA safeguards. Design Information Questionnaire (DIQ) and Initial Inventory Report for TR-A and TR-B facilities were sent to IAEA in 1981. Also, first inspection was made by IAEA inspectors in 1981. IAEA's verification for the inventory and statements for the first inspection was received in 1982.

For TR-C facility, Facility Attachment and DIQ was arranged together with IAEA experts in 1992 an first inspection realized in the same year.

IAEA'S 93+2 PROGRAMME

Turkey has given consistently full support to IAEA programme (93+2) on strengthening the effectiveness and improving the efficiency of the safeguards system.

Agency's Universal Reporting System on nuclear materials and specified equipment and non-nuclear materials has been accepted.

The Agency's "transparency" policy (increased physical access and expanded declaration) has been adopted and the new technical measures "Environmental monitoring" has been supported.

Turkey has supported the activities of IAEA regarding the preparation of Model Protocol since the very beginning, and proved its intention frankly with regard to this subject by signing model Protocol on 6 July, 2000. The process of approval has begun for the Protocol bringing certain additional liabilities in addition to the Comprehensive Safeguards Agreement signed between IAEA and Turkish Government. After completion of approval process, it will be published in Official Gazette and then will be in force.

CONCLUSION

Since Turkey is located in a region surrounded by countries having nuclear activities, more effective safeguards and physical protection measures are required in the region. The improved safeguards system should also be supported and implemented by the States located in the region and the Agency's capability to detect undeclared nuclear activities should be increased.

Besides the activities carried out in Turkey, neighboring countries should also establish or upgrade their own SSAC and physical protection systems to prevent the illicit trafficking and IAEA should support and coordinate these activities. Also, all international effort should be spent to have neighbouring countries sign and implement the Additional Protocol as Turkey did.

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