



Hungarian Atomic Energy Authority

## HUNGARIAN ATOMIC ENERGY AUTHORITY *Nuclear Safety Bulletin*

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## RECENT DEVELOPMENTS IN NUCLEAR SAFETY IN HUNGARY December 2021

### Organizational change

#### *Andrea Beatrix Kádár is the new Director General of the HAEA*

With effect from 29 September 2021, Prime Minister Viktor Orbán appointed Ms Andrea Beatrix Kádár as the new Director General of the Hungarian Atomic Energy Authority on the proposal of the minister responsible for innovation and technology.



*Andrea Beatrix Kádár, new Director General of the HAEA*

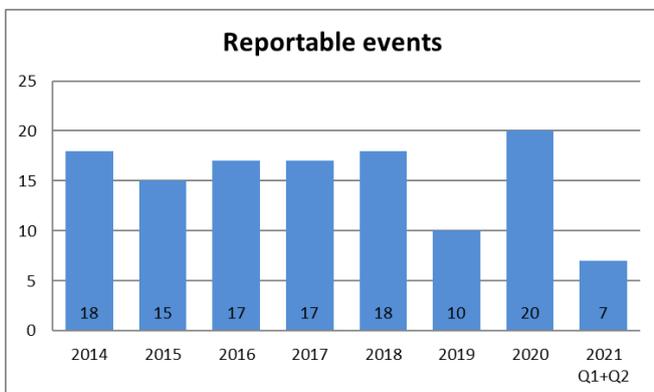
## General

### *2021 semi-annual safety performance assessment of nuclear facilities*

The HAEA regularly evaluates the safety performance of operators of nuclear facilities. The main sources of data for the assessment are regular reports and event reports of the licensees, the protocols of regulatory inspections including regular and comprehensive inspections focusing on specific areas, and reactive inspections.

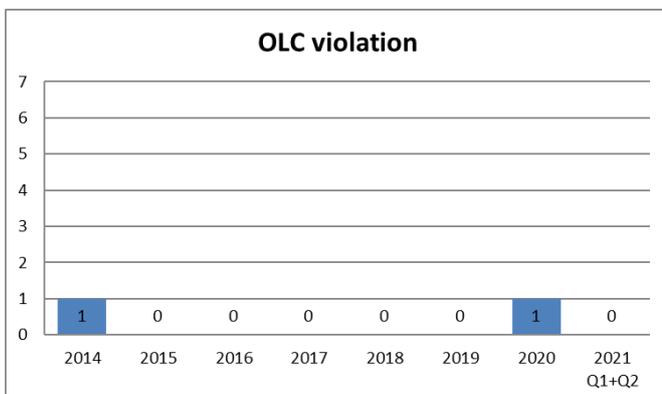
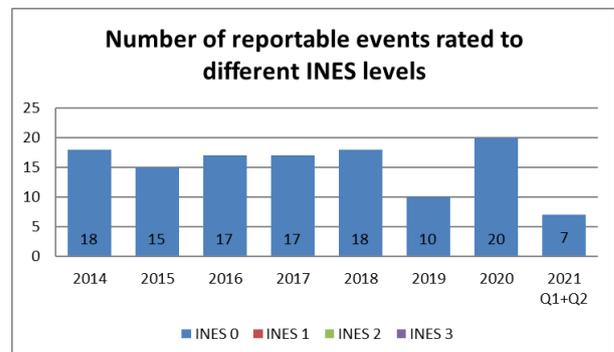
A brief extract is provided below from the semi-annual safety performance assessment. The safety performance data is taken from the first and second quarterly reports of Paks NPP and the first semi-annual reports of the other licensees.

#### *Paks Nuclear Power Plant*



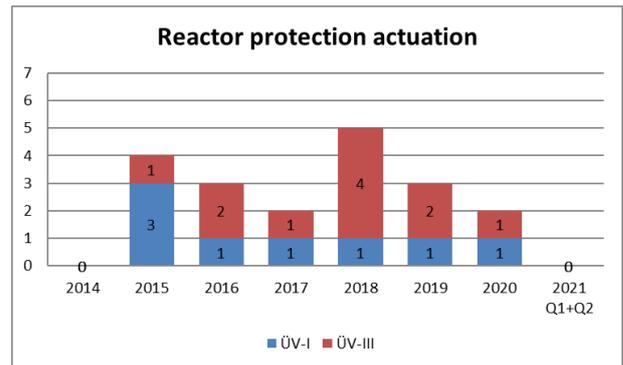
Seven reportable events occurred in the first half of 2021.

Seven events have been reported by the NPP altogether, all of them were of category „below scale” corresponding to Level-0 on the seven-level International Nuclear Event Scale (INES).



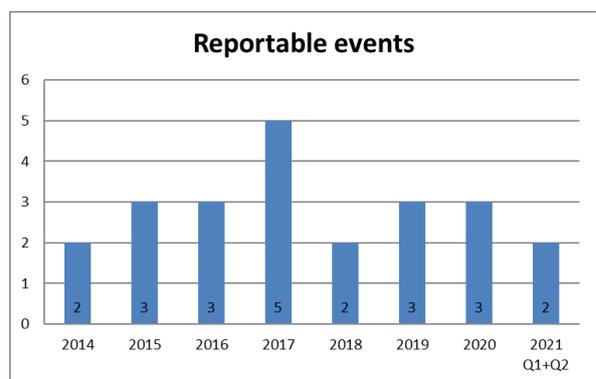
There was no OLC (Operational Limits and Conditions) violation in the first half of 2021.

No automatic reactor protection actuation occurred in the first half of 2021.



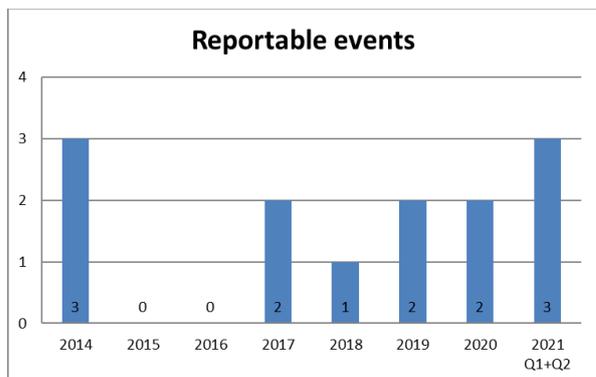
### ***Budapest Research Reactor***

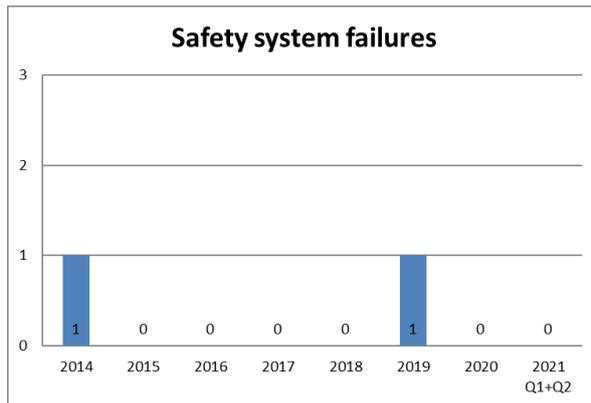
Two reportable events occurred in the first half of 2021. Both incidents were caused by a shutdown due to a two-side voltage failure originated from the offsite network.



### ***Budapest University of Technology and Economics Training Reactor***

Three reportable events occurred in the first half of 2021. One event was related to the replacement of a logic unit, one event to a power failure due to incorrectly wired phases and one event to an open valve.

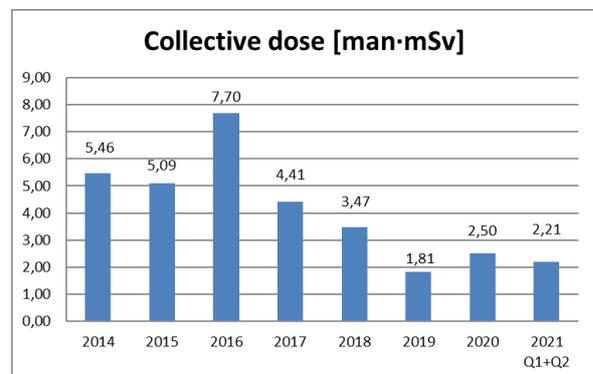




No safety system failure occurred in the first half of 2021.

### ***Interim Spent Fuel Storage Facility***

The collective dose in the first half of 2021 increased compared to the previous half of the year due to the increase in the number of employees controlled and the increase in work.



One reportable event occurred in the first half of 2021. The incident involved an OLC violation in connection with the refilling of the gas space of a group of storage pipes. The pressure in one group of storage pipes in has dropped below the required value. According to the OLC, the pressure can be increased four times without further intervention and control. After considering the situation, the staff decided to immediately refill for the fifth time, thus restoring the pressure in the storage tube assembly, resulted as an OLC violation.

Based on the comprehensive safety performance assessment it can be stated that during the first half of 2021 the nuclear safety of facilities inspected by the HAEA were at appropriate level, as in previous years. The facilities operated safely, did not endanger neither the environment, nor the population, nor the employees.

## ***Legal changes of the first half of 2021***

The **Govt. Decree 423/2021. on amendment certain govt. decrees relating to the use of nuclear energy** was necessary in order to clarify a concept and to create consistency with other laws.

The **amendment of Govt. Decree 112/2011.** (on the scope of authority of the Hungarian Atomic Energy Authority in relation to European Union obligations and international obligations in connection with atomic energy, on the designation of co-authorities contributing to the regulatory proceeding of the Hungarian Atomic Energy Authority, on the scale of fines and on the scientific council assisting the work of the Hungarian Atomic Energy Authority)

In addition to the codification clarifications, the amendment of the decree is primarily related to the latest addition to Govt. Decree 118/2011. The purpose of the amendment was to ensure that the tasks of the Hungarian Atomic Energy Authority (hereinafter: HAEA) include cooperation with the National Accreditation Authority at the legal level as well.

Besides the regulation of language use, the **modification of Govt. Decree 118/2011.** concerns mainly technical issues, the most important of which is the specification of the content of the Documentation Substantiating the Commencement of Post-modification Operation.

The **amendment of Govt. Decree 246/2011.**

The reason for amending the regulation was to bring the regulation on research protection into line with the regulations Govt. Decree 155/2014.

The **amendment of Govt. Decree 190/2011.**

Beyond technical and codification clarifications through the amendment of the decree, the Counter-Terrorism Information and Crime Analysis Center will be added to the members of the Basic Planning Threat Committee, which has so far participated in the work of the Committee as a permanent invited member.

The **amendment of Govt. Decree 155/2014.** (on the safety requirements for facilities ensuring interim storage or final disposal of radioactive wastes and the corresponding authority activities)

The main purpose of the amendment of the Govt. Decree 155/2014. was to harmonize the provisions, to create a uniform use of terms and concepts with the Govt. Decree 118/2011. and Govt. Decree 55/2012.

- The **amendment of Govt. Decree 487/2015**. (on the protection against ionizing radiation and the corresponding licensing, reporting (notification) and inspection system) was of a legal technical nature, of which the following should be highlighted:
  - ❖ Regarding to the permits issued for the performance of radiation protection training and for the performance of radiation protection expert activities, the amendment prevented the same licensee from having two permits valid in parallel for the performance of the same activity.
  - ❖ According to the Section 14. § (1) of the Act on Atomic Energy the HAEA may issue a consolidated permit at the request of the licensee in the cases and under the conditions specified by law. The amendment of Govt. Decree 487/2015. explicitly allows for this.
  - ❖ According to Section 57. § (1) point a) and ab) of Govt. Decree 487/2015. the licensee must notify the cessation of the operation of the equipment generating ionizing radiation, which does not necessarily coincide with the cessation of the authorized activity. The amendment of Govt. Decree 487/2015. provides a clearer legal solution for this.

### ***Teleworking period is over at the HAEA***

Based on the recommendation of the Defense Working Committee, the Deputy Director General and the HAEA, due to the pandemic situation, the employees of the authority started to work in two weeks rotation: two weeks teleworking, two weeks working in the office. For entering the office building of the HAEA besides the standard entry protocol, mask wearing and certificate of SARS-COV-- vaccination are needed.

For business trips abroad, online participation is preferred where it is possible. The Committee constantly monitors the changes of the pandemic situation as well as government measures and, if necessary, gives advice and recommendations to introduce protective measures again.



*Staff meeting*

## ***The HAEA held two electronic public hearings between March and October***

An electronic public hearing related to the licensing procedure for the construction of new nuclear power plant units lasted from 4 to 18 March. During this period, the HAEA received more than a hundred questions and opinions, in addition to individual public inquiries, non-governmental organizations and political actors also sent questions and expressed their views. Because of the restrictions and legislation due to the pandemic situation, it was only possible to hold a public hearing in electronic form. The report on the public hearing included the responses and reactions.

During the electronic public hearing held in the procedure entitled “Application for a permit for the establishment of the Bataapáti National Radioactive Waste Storage Facility (NRHT)”, the comment and questioning period lasted from 11 August to 17 August 2021, and a total of ten questions were received.

Reports of the electronic public hearings are available on the HAEA website.

[Report on the electronic public hearing related to the licensing process for the construction of new units](#)

[Report on the electronic public hearing held in the NRHT application license procedure](#)

## **Nuclear emergency preparedness**

### ***Information on nuclear emergency preparedness***

The development of the Emergency Response Organisation of the Hungarian Atomic Energy Authority (HAEA ERO) has been continued since last year. Eight Radiological Experts / Analysers colleagues who have learned in the last six months have passed the exam.

In the recent period, we organized two methodological exercises for the HAEA ERO Management and Radiological Group. In May 2021, a new Crisis Manager was added to the staff of HAEA ERO during the management methodology exercise related to the IAEA ConvEx-2a type exercise, while a new Radiological Manager passed the radiation protection methodology exercise held in the summer.

The organisation of emergency response exercises was affected by the current coronavirus pandemic and that encouraged the development of new methods of organization and exercising. The exercises are held either in the CERTA centre or online, depending on the current situation.

The national exercise, which was postponed in 2020 and is the most significant at the national level, based on the facility-level exercise of the Paks Nuclear Power Plant, was held in September this year. The HAEA ERO participated in the exercise that was successful. In this exercise colleagues proved their skills in the role of Nuclear Manager, Reporter and Radiological Manager and passed their exams. Furthermore, in this exercise two new Logistics

Officers colleagues were trained. Preparations for the annual national exercise, scheduled for November 2021, had to be postponed due to the fourth wave of COVID-19

The HAEA ERO joins the complex CONVEX-3 and ECUREX nuclear emergency response exercise, which provides opportunity for newly learned ERO colleagues to practice.

The EPREV follow-up Mission of the International Atomic Energy Agency was originally planned for October 2020 to review the progress based on the recommendations and suggestions of the previous Emergency Preparedness Review Mission in 2016. To prepare for the mission, the organisations involved in the mission, with the coordination of the HAEA, reviewed the national self-assessment originally created in 2016 and prepared the so-called Advance Reference Material (ARM). Purpose of ARM is to assist the preparation of the international experts with presenting the relevant legislations and regulatory documents supplemented by the information about the implementation of the suggestions and recommendations of the original EPREV mission. Due to the pandemic the follow-up mission was expected to take place in November 2021, but had to be postponed.

## Paks NPP

### *Loss of two safety systems in Unit 1 In-Service Maintenance mode*

In 2021 June 11 on Unit 1 In-Service Maintenance was performed.

The position signals of consumers operating from the 0.4 kV main distributor have been discontinued. The operation of the consumers was not ensured from either the control room or the backup control room. As a result, the operation of the LP and CS pumps was not assured. During debugging and repair, two operational conditions did not meet.

Based on the relevant instruction, the commissioning of the Unit-1 to M5 (cold operating condition) has been started. The event was caused by a poorly connected cable in one of the fields of the 0.4 kV main distributor. After the connection had been restored, the error message disappeared. Rating of the Event INES 0.

The direct cause was a poorly connected cable in one of the fields of the 0.4 kV main distributor. Based on the information available, the root cause of the incident cannot be determined.

The corrective actions are the followings: In 2022, during Unit 1 outage the proper connection of the cable must be checked. In case of non-compliance, the cable must be corrected.

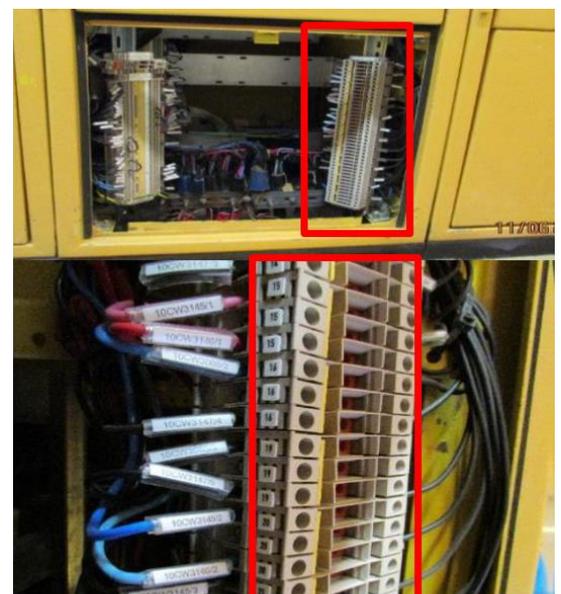
The event lessons learned should be presented in the context of refresher training.

The external employer must demonstrate the corrective actions taken in connection with the installation defect to prevent a recurrence of the event.



Field 22

**Fields of 0,4 kV  
main distributor**



**Terminal blocks**

*Fields of 0,4 kV main distributor*

The authority evaluated the investigation report. The licensee took appropriate corrective actions for the detected deviations.

## **Paks II. project**

### ***Regulatory licensing, supervision and inspectoral activity of the HAEA***

Paks II Nuclear Power Plant Ltd. submitted the construction license application to the Authority on 30<sup>th</sup> of June 2020, and the official licensing procedure started on the 1<sup>st</sup> of July 2020. The evaluation of the more than 77 000 pages of documentation submitted – including the construction license application as well as further additional documentation – is still in progress by fifteen evaluation groups standing up by half of the HAEA employees. The submitted documentation is very thorough in several respects, however, to be able to fully verify all requirements, further assessment and analysis is needed in some areas for the Authority, taking into account the recommendations of the International Atomic Energy Agency's mission. Therefore, the Hungarian Atomic Energy Authority has requested further clarification for the licensing procedure.

The HAEA has involved co-authorities, as well as national experts in the assessment of the complete documentation. Besides this, the Authority has also contracted International Atomic Energy Agency (IAEA) for a "Technical Safety Review" mission including Design Safety and PSA topics; the mission is at the final stage.

At present, the HAEA has ordered further requests for clarification in the licensing process to ensure that all requirements are fully met, and the Authority considers that further analysis is needed in some areas, taking into account the recommendations from the IAEA mission.

During the construction license evaluation procedure, the HAEA manages further over hundreds of other licensing procedures in connection with the new NPP construction (e.g. manufacturing permits).

In addition to all of the above, the HAEA constantly performs occasional and comprehensive inspections at the Paks II Nuclear Power Plant Ltd. To comply with the protection against the COVID-19 pandemic, the HAEA maintains the new kind of inspection method so-called hybrid inspections. That means the inspectors conduct the inspection at the Licensee time stream online to other inspectors in the HAEA at the same time, so they can interact in real-time in case of needs. (In this way it still minimizes the number of contact among people.)

Currently, several constructions erection base (CEB) structures (e.g. concrete mixing plant, steel assembly workshop, offices and storages) and 2 soil preparation implementations run on the site. Paks II Nuclear Power Plant Ltd. plans 80 CEB buildings in total to which the Authority gave already permission to 23 ones within 18 construction licensing procedures.

## **International Cooperation**

### ***65th IAEA General Conference in Vienna, Austria***

The 65th General Conference of the International Atomic Energy Agency was held in Vienna from 20 to 24 September 2021. Member States adopted resolutions strengthening the IAEA's technical cooperation activities, the effectiveness and efficiency of safeguards, and its work related to nuclear and radiation safety, nuclear science, technology and applications among others.

Over 1 600 participants attended the General Conference either in-person or virtually, including delegates from 148 of the IAEA's 173 Member States, and from international organizations, non-governmental organizations and the media.

Several side-events took place during the week of the General Conference, most important among them the Scientific Forum, which focused on ways of preventing, preparing and responding to diseases that transfer from animals to humans (zoonotic diseases).

In his speech, delivered on behalf of Hungary, Mr Péter Sztáray, State Secretary for Security Policy mentioned the most important events related to the nuclear field that occurred in our country since the 64rd General Conference in 2020, and thanked the IAEA for its support in fighting COVID-19 in Hungary.

This year the Hungarian Atomic Energy Authority had the opportunity to hold bilateral meetings with representatives of other national authorities, namely Belarus, Croatia, the Czech Republic, Finland, the Russian Federation, Slovakia and Turkey. The representatives of HAEA also held a bilateral meeting with the IAEA TC Department.

## **Physical Protection**

### ***National Training on Conducting Computer Security Assessments at Nuclear Facilities***

Between 18<sup>th</sup> and 22<sup>nd</sup> October 2021 the Hungarian Atomic Energy Authority (HAEA), together with the International Atomic Energy Agency (IAEA), organised a National Training on Conducting Computer Security Assessments at Nuclear Facilities in Budapest. The training was held as a part of the IAEA's support for Hungary within the Integrated Nuclear Security Support Plan programme, which Hungary joined in 2018.

The aim of the course was to provide training for cyber security experts on conducting self-assessment, to identify gaps in security policy, procedures, and computer security controls in order to propose and mitigate computer security vulnerabilities to defend against the current threat.

The participants came with different backgrounds from many organisations: the Centre for Energy Research, MVM Paks NPP Ltd., Paks II NPP Ltd., the Hungarian Defence Forces and the Public Limited Company for Radioactive Waste Management. The HAEA, to strengthen the cooperation between the two fields, delegated both safety and security inspectors to the training event. The HAEA is determined to organise similar events in the future, to ensure the spread of international good practice in domestic practice.



*The opening of the week long training course*

## **Nuclear safeguard**

### ***30 years of the Hungarian safeguards support programme***

In 1991, Hungary joined the group of states to support the IAEA strengthening its safeguards system. Therefore, the Hungarian support programme celebrates its 30th anniversary in 2021. Within the framework of the support program, Hungary provides continuous support to the IAEA in its activities, which have a priority mission to prevent the proliferation of nuclear weapons and to facilitate the peaceful use of nuclear energy.

In its 30-year history, the Hungarian support programme has been able to effectively support the IAEA in maintaining and developing its international safeguards system, in four main areas.

### Support in the IAEA training activities

The Hungarian nuclear facilities and licensees with nuclear material have been providing locations for practical trainings since the beginning of our support programme in order to assist in the IAEA training program of international professionals. Due to our expertise and the diversity of facilities operating in Hungary, we are able to host various IAEA training, including active participation, in the development of training scenarios and conducting trainings as well, thus contributing to the expansion of the knowledge of international nuclear material inspectors.



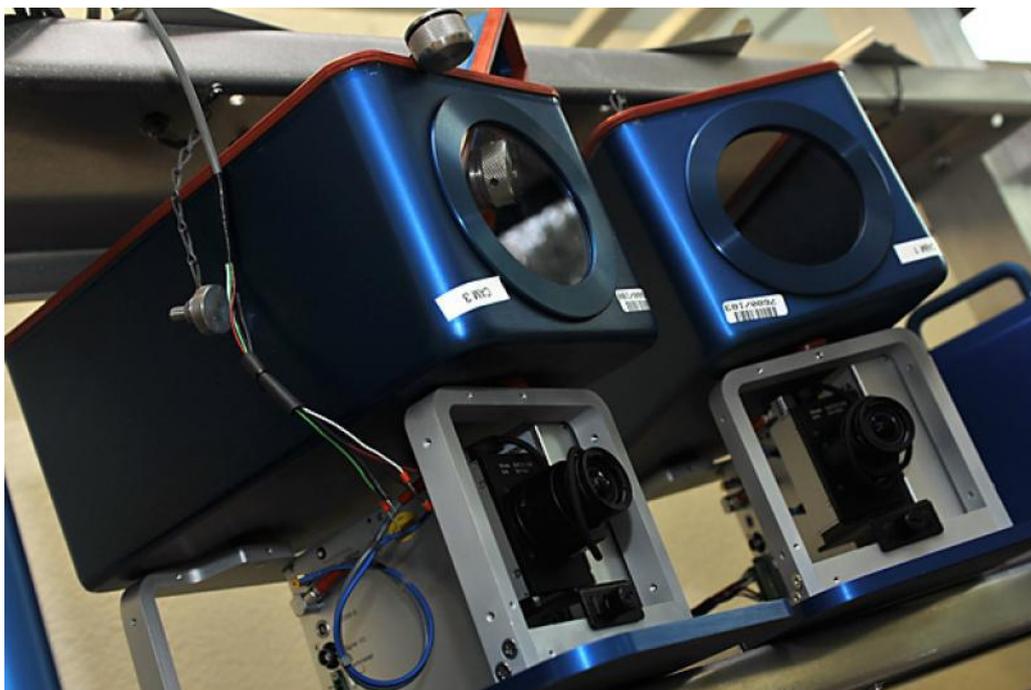
*Montage on the training activities of IAEA inspectors*

### Support in the development of equipment and technologies

In the last 30 years, the Hungarian regulatory system has had many challenges, which required the development of equipment and measurement methods adapted to the specifics of the domestic facilities. The methods developed for domestic conditions helped the international safeguards inspectors in the verification in terms of nuclear safeguards both in the Hungarian nuclear facilities and in the nuclear facilities of other countries in a similar situation. Equipment developed under the support programme includes, for example, a gamma spectrometer-based portable spent fuel tester, a multiplicity spectrometer, or a portable laser-induced plasma spectrometric equipment.

### **Support in testing new instruments and equipment**

Over the past 30 years, we have provided facility conditions many times to test the newly developed monitoring systems and innovative technologies. In addition to the monitoring systems, it is planned to test a Cherenkov measuring device floating on the surface of the water, which would help the inspectors during nuclear safeguards inspections and increase the efficiency of the inspections.



*Cameras of the IAEA surveillance system*

### **New approaches to developing the IAEA and Member States' safeguards systems**

In addition to the trainings and the development and testing areas described above, the Hungarian safeguards support programme places great emphasis on the development of new safeguards provisions aimed to be able to inspect countries according to their capabilities and opportunities (state level approach). The tasks of the support programme on this topic included the development of a methodology and corresponding software that analyses the potential diversion routes in a given country. We have been involved in the task of collecting and analysing information on nuclear trade, as well as in the task of support the IAEA developing its guidelines to assist in the implementation of national safeguards systems. In addition, we are involved in a task to help some countries develop their nuclear safeguards system.