



HUNGARIAN ATOMIC ENERGY AUTHORITY Nuclear Safety Bulletin

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RECENT DEVELOPMENTS IN NUCLEAR SAFETY IN HUNGARY November 2022

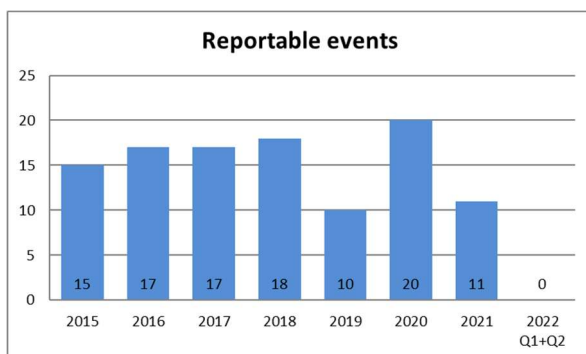
General

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.

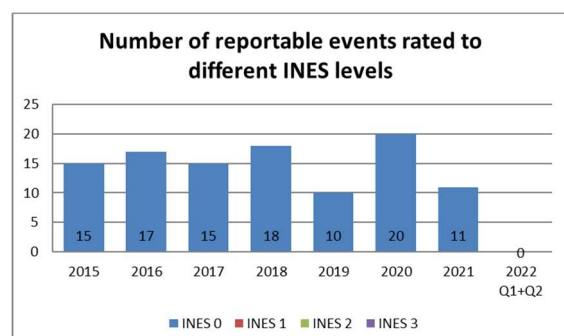
A brief extract is provided below from the semi-annual safety performance assessment. The safety performance data is taken from the first and second quarterly reports of Paks NPP and the first semi-annual reports of the other licensees.

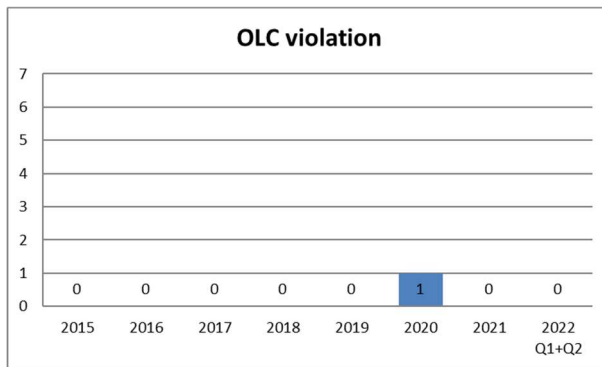
Paks Nuclear Power Plant



No reportable event occurred in the first half of 2022.

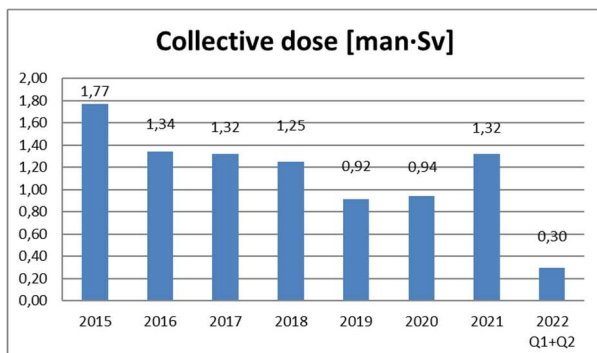
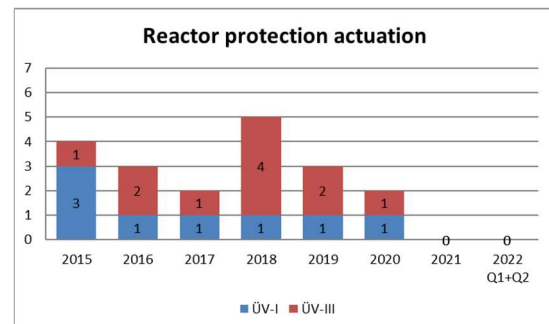
Since 2013 all events were of category „below scale” corresponding to Level-0 on the seven-level International Nuclear Event Scale (INES).





There was no OLC (Operational Limits and Conditions) violation in the first half of 2022.

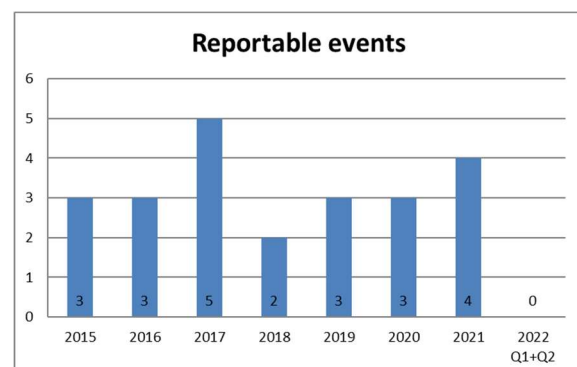
No automatic reactor protection actuation occurred in the first half of 2022.



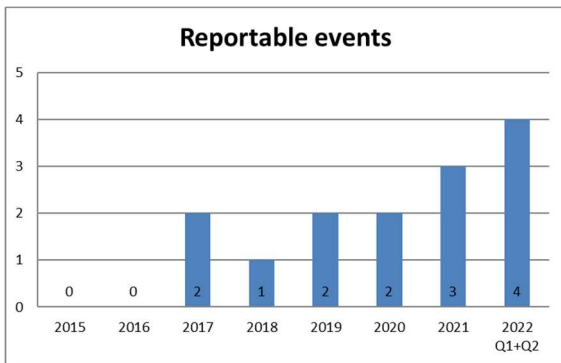
The employee's collective dose of the first half of 2022 is comparable low to the previous year's values.

Budapest Research Reactor

No reportable event occurred in the first half of 2022.

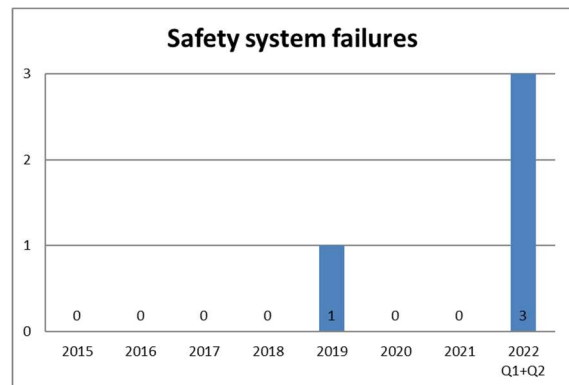


BUTE Training Reactor

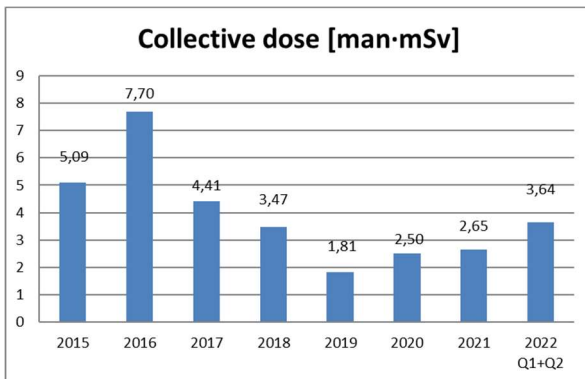


Four reportable events occurred in the first half of 2022. Three events were related to measuring system failure, one was due to OLC deviation.

Three safety system failure occurred in the first half of 2022, due to the failure of a primary pH meter, a measuring chain and the Radiation Protection Control System

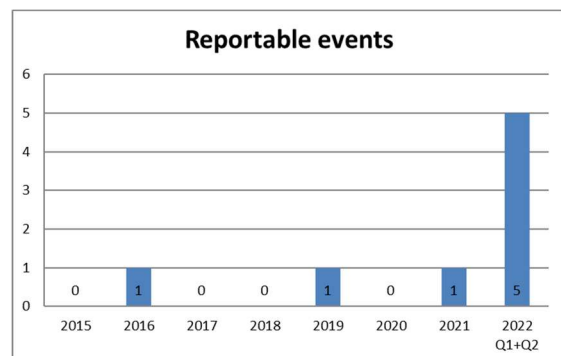


Interim Spent Fuel Storage Facility



The collective dose in the first half of 2022 increased compared to the previous year due to the increase in the number of employees controlled and the increase in work.

Five reportable event occurred in the first half of 2022. One incident was due to a component dimensional error, one incident was due to a hoist failure, two incidents were due to a seal failure, and one OLC violation was due to a failure to refill the gas space in the storage pipes.



According to the notification of PURAM in 22 June 2022, the filling of the nitrogen monitoring system at one of the storage pipe groups in the Interim Spent Fuel Storage Facility was not carried out on time. According to the provisions of the OLC, the absence of nitrogen gas filling is allowed for a maximum of 60 days. The incident did not have any impact on the environment or on personnel. The incident was classified by PURAM as INES category 1 and reported to the HAEA. The HAEA accepted the preliminary classification and is overseeing the investigation of the incident.

Based on the comprehensive safety performance assessment it can be stated that during the first half of 2022 the nuclear safety of facilities inspected by the HAEA were at appropriate level, as in previous years. However, the high number of incidents at the BUTE Training Reactor and the Interim Spent Fuel Storage Facility justify increased regulatory oversight of the facilities.

Parliamentary report on the activities of the HAEA in 2021

In May this year, the Hungarian Atomic Energy Authority, as an independent regulatory body with a special status, prepared its first Parliamentary Report, giving account of its activities of the previous year. This document was made necessary following the change in HAEA's legal status. Since 1 January 2022, the HAEA is directly under the supervision of the National Assembly, and must report on its activities in writing and take part in a hearing in front of a specialised committee of the National Assembly.

The Report has been prepared by the HAEA in accordance with the relevant legislation and was submitted on time and in the required form and content.

The report focuses on 2021, as such it describes the activities, operations and management of the HAEA prior to the transformation, but including the process of preparation for the new legal status.

The 80 page long report focuses on the HAEA's activities in terms of supervision, regulatory and inspection activities of the major licensees, such as nuclear facilities and radioactive waste storage facilities. Beside these, the tasks of the authority, the international activities, financial management and the external communication were also presented.

Legal changes of the first half of 2022

As a result of the change in its legal status, the HAEA has been an independent regulatory organ since January 1 2022 and it has been empowered to issue regulations in the scope of its tasks defined by the Act on Atomic Energy based on the authorization of the Fundamental Law of Hungary.

In the first half of 2022, the HAEA issued seven decrees, which entered into force on May 1 and replaced the legislation previously regulating specific fields. The content of the HAEA decrees remained unchanged comparing to the repealed relevant legislation.

The following HAEA Decrees entered into force on 1 May 2022:

- 1/2022 HAEA Decree on the nuclear safety requirements of nuclear facilities and on related regulatory activities
- 2/2022 HAEA Decree on the protection against ionizing radiation and the corresponding licensing, reporting (notification) and inspection system
- 3/2022 HAEA Decree on the rules of accountancy for and control of radioactive materials, and on the corresponding data provisions
- 4/2022 HAEA Decree on the rules of accountancy and control of nuclear materials
- 5/2022 HAEA Decree on the independent technical expert acting in the field of the application of atomic energy
- 6/2022 HAEA Decree on the administrative fees payable for certain administrative procedures and services of the Hungarian Atomic Energy Authority
- 7/2022 HAEA Decree on detailed rules for the certification and registration of competences for working as a technical expert, designer, technical inspector and responsible technical manager in connection with buildings and installations subject to the law on nuclear energy and rules governing the information to be included in the register

Act 1 of 2022 contains provisions amending the Atomic Act. The amendments stipulate data supply obligations for the ministers in listed cases in the scope of their competence in the use of atomic energy. The amendments give the power to the President of the HAEA to issue regulations in a number of cases. The nuclear facilities can submit technical documents in Hungarian or English to the HAEA determined by Decree of the President of the HAEA in certain processes.

Due to the amendment of Govt. Decree 112/2011., the scale of fines has been increased that can be imposed by the HAEA within its regulatory oversight competence on the licensee of a

nuclear power plant, other nuclear facility, and other licensees, as well as on licensees obliged to data supply in cases within the competence of the HAEA, defined in the Act on Atomic Energy.

According to the amendment of Govt. Decree 34/2009., the competent authority can notify the foreign applicant about the authorization of the shipment of radioactive waste or spent fuel out of the territory of Hungary electronically that does not qualify as written communication.

Pursuant to Govt. Decree 182/2022. on duties and powers of the members of the new government, a number of responsibilities related to Paks 2 were transferred to the duties and powers of the Minister of Foreign Affairs and Trade.

Nuclear emergency preparedness

Information on nuclear emergency preparedness

The personnel of the Emergency Response Organisation of the Hungarian Atomic Energy Authority (HAEA ERO) were able to successfully practice their nuclear emergency response tasks on several occasions in 2022 as well.

In June 2022, a national exercise based on the exercise of the Paks Nuclear Power Plant was organized, in which the HAEA ERO also participated. The members of the Management Group and the Nuclear Group, as well as the Radiological Manager, were able to prove their preparedness. The exercise was completed successfully, the good experiences and suggestions for improvement were collected and recorded in the evaluation report.

In the summer of 2022, the Radiological Group participated in the further training and refresher course of the J-RODOS environmental simulation software, which provided a good practice and learning opportunity for ERO colleagues.

The HAEA ERO would have joined the ConvEx-2a accident prevention exercise, which was originally scheduled to be held in September 2022 and organized by the International Atomic Energy Agency (IAEA), but it was postponed due to the organizer's request. The purpose of this exercise is to test whether the Competent Authorities can fill out the forms correctly, and whether they can upload the monitoring data as IRMIS data providers. The exact date of the postponed exercise is not yet known, but the IAEA aims to hold it this year.

The IAEA EPREV "follow-up" mission, originally planned for October 2020 and then postponed several times due to the epidemic situation, took place successfully between July 4-8, 2022. The international delegation of experts examined the utilization of their suggestions and recommendations made during the 2016 EPREV mission in relation to the domestic nuclear emergency response system. The implementation of the action plan developed on the basis of the findings of the 2016 mission was effective, significant improvements were made in many areas in Hungary. The good cooperation between the organizations involved in nuclear emergency response and the transparency of the National Nuclear Emergency Response System were particularly highlighted. The final report, accepted by all parties, became final by September 2022.

Paks Nuclear Power Plant

Unavailability of the Low-Pressure Injection Pump caused by a distributor lock

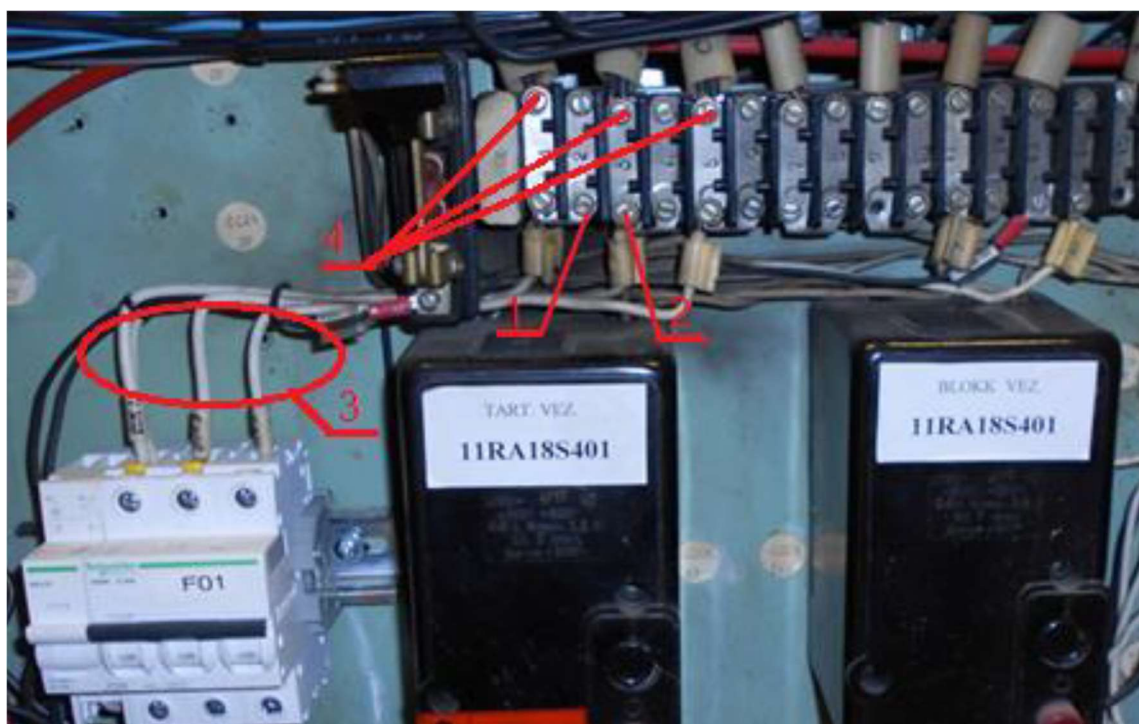
The Low-Pressure Injection System plays an important role in the active protection of the Units of the Paks Nuclear Power Plant.

The engineer of the Safety System Division unintentionally caused a short circuit in the distributor he was checking. As a result of the shutdown, several armatures, mechanical equipment and measurements were left without electrical supply. The protection function (lock) of the Low-Pressure Injection System and the measurements of related systems were not operational, which caused the inoperability of the fittings and pumps. Since the duration of the inoperability (10 minutes) was short, the impact of the event on nuclear safety was not significant.

The incident occurred directly because during the inspection, the technician caused a short circuit between phases A and B with the pliers and the technician did not notify the other member of the work team about the intervention he planned. The root cause was that the engineer did not follow the written procedures for the inspection, as he reached into the sub-distributor with pliers, thereby endangering the operation of the technological system.

The necessary corrective actions (training, report on operational experiences) have been taken.

The impact of the event on nuclear safety was not significant, however, the HAEA is conducting an inspection regarding the event as part of the ongoing investigation.



The location of the short circuit is between phases A and B

New subchannel model integration into the VERONA core monitoring system

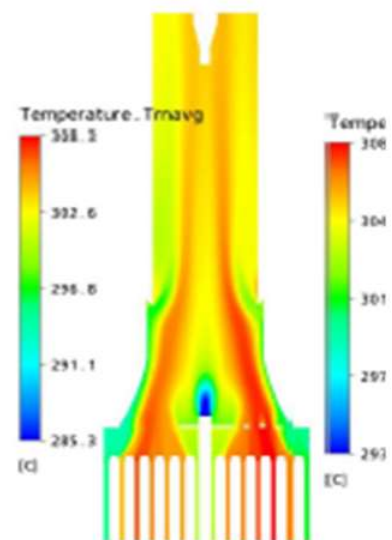
The HAEA has issued a license for the general use of the new water-uranium ratio optimized so-called SLIM fuel at the unit 1-4. of Paks NPP after the successful operation of 18 Lead Test Assemblies throughout the 35th cycle at unit 3.

With the introduction of the new fuel type with thinner cladding the revision of the subchannel calculations of the VERONA core monitoring system was needed, which plays an important role in determining the outlet temperature of the fuel assemblies. Due to the introduction of the mixing vanes to the spacer grids the algorithm with a simplified mixing model applied to the old fuel assemblies in the VERONA system can only determine the flow conditions between the subchannels with less accuracy. A new, detailed thermo-hydraulic subchannel calculation model, SURET was developed in order to ensure the desired core monitoring accuracy even after the introduction of the SLIM fuel.

Since the licensee verified the adequacy of the SURET module with the help of the information collected during the test operation, the HAEA granted permission to integrate the new subchannel calculation model into the operational VERONA core monitoring system in decision number PAE-HA7460.



Spacer grids with mixing vanes



The CFD simulation of the coolant mixing a head of the FA

Paks II. project

Licensing procedures of Paks II. Nuclear Power Plant Ltd.

On August 25, 2022, the Hungarian Atomic Energy Authority (HAEA) granted the license for the construction of units 5 and 6, as well as designated the safety zone of these nuclear power plant units to the Paks II. Nuclear Power Plant Ltd. (Paks II. Ltd.). The procedures for obtaining the construction license and designating a safety zone commenced on July 1, 2020. The goal of the construction licensing procedure is to ensure that the proposed nuclear power plant complies with all applicable legislative requirements. By designating the safety zone, the population must be protected from radiation exposure caused by the operation of the nuclear facility under normal operating conditions, the nuclear facility must be protected from the human activity to be performed, and the requirements taken into account when establishing the nuclear facility's safe operability must be maintained permanently.

The condition for granting of licenses of HAEA is always the fulfillment of the requirements contained in the Nuclear Safety Codes.

The HAEA made its decision based on a comprehensive and detailed assessment of the facts available, as well as on the examination of the fulfillment of legal requirements. During the procedure, the HAEA examined and evaluated analyses and technical documents submitted by Paks II Ltd., and also took into account all the relevant information available. During the procedure, the HAEA stated that the submitted application meets the Hungarian legal requirements from the point of view of nuclear safety. According to the law currently in force, the nuclear safety authority can define conditions and obligations in its decision if this is necessary to ensure the safety of the nuclear facility. The construction license is valid for 10 years. It is important to point out that the construction license is a complex, facility level license, which applies to the acceptance of the complete technical concept and safety solutions of the nuclear power plant.

The construction license alone does not entitle the licensee to start the construction works, for those additional specific (thousands of) permitting procedures will be necessary on the level of systems, components and buildings. Exceptions to this are building permits related to site-preparatory activities (such soil excavation, soil improvement, cut-off wall) and manufacturing permits for the long lead items, which could be issued even before the construction licence was obtained.

The authorization procedures for the site-preparatory works are not legally dependent on the construction licencing process. An excavation pit with a bottom of -5 m will be created during the soil excavation above the groundwater level and following it, the execution of soil improvement and the cut-off wall can begin. The primary goal of soil improvement is to prevent

the effects of soil liquefaction and to guarantee that the building pit is watertight from the bottom up. The cut-off wall's primary function is to ensure that the construction pit is watertight from the sides and to lessen the impact of water flow from the pit onto the already-operating Paks NPP. The HAEA assessed the three applications and included independent external experts in the evaluation procedure. In order to aid in the supervision of the construction process, various extra responsibilities and hold points have been prescribed for the applicant in the building permits. The HAEA has not yet received the final application for the preparatory work's soil excavation to the full planned level.

For the core catcher and reactor equipment's reactor pressure vessel, which are long lead items, Paks II. Ltd. submitted the manufacturing license applications to the HAEA, for which on June 30, 2022, and August 25, 2022 the license was granted.

Required by national and international standards, new nuclear power plants must be prepared for major accident scenarios that are extremely unlikely to occur. The melting of the reactor core is one of the accidents with the most severe consequences (for instance, this occurred during the disaster at Fukushima's NPP in 2011). To lessen the effects of such an occurrence, the core catcher was designed. With its aid, it is possible to stop the molten core from coming into contact with the base plate's concrete, lower the production of explosive hydrogen, and the release of radioactive materials into the environment.

One of the most crucial components of a nuclear power plant unit is the reactor pressure vessel, which is a component of the reactor equipment that contains the reactor's active core and internal structural components. The administrative deadline had to be extended in order to prepare a well-founded decision while utilizing the legal options available due to the large amount of documentation submitted during the process, the complexity of the submission's content, and the time needed to process numerous experts (national and international) opinions that arisen.

Several permit applications made throughout the construction license process could be decided upon after the construction licence was given. For instance the seven buildings of the unit 5 nuclear island, which are the following: the Reactor building (50UJA), the Control building (50UCB), the Steam cell (50UJE), the Auxiliary building (50UKA), the Safety building (50UKD), the Switching chamber (50URS) and the Equipment lock trestle (50UJG). The Reactor building, which has a double containment, is the most important from the nuclear safety point of view. The HAEA received applications for the building permits for these structures at the end of 2021 and the beginning of 2022, even though the NSC prescribes that the building permits cannot be granted prior to the issuance of the construction license. The HAEA approved the building licenses for these structures on the nuclear island of unit 5 on August 30, 2022.

International Cooperation

Hungary's 9th National Report under the Convention on Nuclear Safety (CNS)

The Convention on Nuclear Safety (CNS), adopted in 1994, obliges signatory states to report every three years on the safety of operating civil nuclear power plants on land. In early 2022, in accordance with its obligations under the Convention, the HAEA compiled Hungary's ninth national report for the period 2019-2021, in consultation with licensees of nuclear facilities, co-authorities and governmental bodies. However, the report contains the status of the Paks NPP that only falls under the scope of the Convention, the other 3 nuclear facilities operating in Hungary are also mentioned, together with the milestones of construction of Unit 5 and 6 planned in the frame of maintaining the capacity of the Paks NPP.

In August 2022, the HAEA submitted the national report to the International Atomic Energy Agency, the depositary of the Convention. The Ninth National Report details the progress made in nuclear safety, the performance of nuclear installations and the development of the regulatory regime over the last three years. In addition, in line with the Vienna Declaration on Nuclear Safety adopted in 2015, the report gives priority to demonstrating compliance with the three key principles set out in the Declaration. The report will be subject to a thorough review by states parties to the Convention in the coming months. This process will conclude with the CNS review meeting in 2023.

Joint Convention 7th Review Meeting

Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management were attending the Seventh Review Meeting of the Convention from 27 June to 8 July 2022 at the IAEA's headquarters in Vienna to share their experiences and lessons learned.

Every three years, the Contracting Parties to the Convention hold a review meeting to report on changes since the last meeting and on national practices. Prior to the review meeting, the Contracting Parties submit a national report to the International Atomic Energy Agency and then submit written comments and questions to each other. Developments following the submission of the report are presented at the Review Meeting. The JC 7th Review Meeting was originally scheduled to take place in 2021, but was postponed to 2022 due to the coronavirus epidemic.

Over the course of two weeks, Contracting Parties presented and discussed their national reports through a constructive exchange of views so that they can learn from each other about solutions in the field of safe management of spent fuel and radioactive waste.

The Hungarian national report was discussed on the first day of the Review Meeting. Hungary was represented by a delegation led by the President of the Hungarian Atomic Energy Authority, Andrea Beatrix Kádár. The delegation included representatives of the Ministry of Technology and Industry, the Public Limited Company for Radioactive Waste Management, MVM Paks Nuclear Power Plant Ltd. and the Mining Property Utilization Ltd. Based on the national report, the Hungarian national presentation and the answers to the questions, the Review Meeting concluded that the Hungarian practice meets the requirements of the Convention. The continued efforts of the Hungarian institutions on public outreach and the development of safety improvement plans for the Radioactive Waste Treatment and Disposal Facility in Püspökszilág were particularly recognized.



Joint Convention 7th Review Meeting

66th IAEA General Conference in Vienna



66th IAEA General Conference in Vienna

The 66th annual IAEA General Conference, which was held from 26 to 30 September 2022, concluded with resolutions adopted on nuclear and radiation safety, nuclear security, strengthening the effectiveness and improving the efficiency of Agency safeguards, and the Agency's work in the areas of nuclear science, technology and applications, as well as its technical cooperation activities.

Over 2500 participants attended the conference in person, including delegates from 153 of the IAEA's 175 Member States, and from international organizations, non-governmental organization and the media.

Several side events took place on the margins of the General Conference, the most important of which were a two-day Scientific Forum on 'Rays of Hope: Cancer Dare for All', which focused on establishing and expanding cancer diagnosis, treatment and care capabilities in countries with limited access.

The delegation of the Hungarian Atomic Energy Authority was led by Andrea Beatrix Kádár, President of the HAEA. In addition to the GC programmes, the President participated in bilateral and multilateral meetings with the heads of other nuclear regulatory authorities, and in high-level discussions with the OECD Nuclear Energy Agency and the European Commission.

HAEA leaders held meetings with representatives of the nuclear regulatory authorities of the US, Argentina, Bulgaria, Croatia, Finland, Poland, Morocco, Romania, Serbia and Türkiye. The

bilateral discussions focused on the evaluation of the previous period and the direction of future cooperation.

The HAEA delegation held a quadrilateral meeting with the Czech, Slovak and Slovenian authorities to discuss current issues of common interest and to review technical issues that may require a common position towards international organisations.

The meeting with the nuclear regulatory bodies of the United States of America and Romania was a highlight of the series of meetings, with the HAEA signing a renewed memorandum of understanding with these countries for the next five-year period. A first high-level meeting was held with the Argentinean authority, one of its objectives being to identify the main areas of future cooperation.

Visit of the HAEA President to the IAEA



Visit of the HAEA President to the IAEA

On 23 June 2022, the President of the Hungarian Atomic Energy Authority, Andrea Beatrix Kádár, paid an official introductory visit to the International Atomic Energy Agency. The President was received by IAEA Director General Rafael Mariano Grossi and his deputies Lydie Evrard, Deputy Director General for Nuclear Safety and Security, Massimo Aparo, Head of Nuclear Safeguards and Hua Liu, Deputy Director General for Technical Cooperation.

During her meeting with the IAEA Director General, Ms Andrea Beatrix Kádár reported on the changes in the status of the HAEA, which will help it to become an even more efficient, modern and independent nuclear regulatory authority. The President underlined that Hungary has

always paid great attention to cooperation with the IAEA at all possible levels and on all possible issues and confirmed that we will continue to maintain this commitment in the future. During the meeting with the Deputy Director General for Nuclear Safety and Security, the HAEA President underlined that Hungary attaches great importance to nuclear safety and security issues, as maintaining a high level of safety and security is a prerequisite for the successful operation of all nuclear facilities and activities in the country.

During her visit to the Head of Nuclear Safeguards, Ms Kádár referred to the 30th anniversary of the Hungarian Safeguards Support Programme and expressed her appreciation for the IAEA's strong commitment to maintain such cooperation with Hungary.

Consulting with the Deputy Director General for Technical Cooperation, the President of HAEA said that Hungary appreciates the Agency's technical cooperation activities in all fields of nuclear applications. She also thanked the Agency for its support under its Technical Cooperation Programme. Over the years, this programme, among many other areas, has helped Hungary to establish an infrastructure for the peaceful uses of nuclear energy.

Visit of the HAEA President to STUK, Finland



Visit of the HAEA President to STUK, Finland

On 13th July 2022, Ms Andrea Beatrix Kádár, President of the Hungarian Atomic Energy Authority paid a visit to the Finnish Radiation and Nuclear Safety Authority (STUK). The president was received by Mr Petteri Tiippana, Director General of STUK. Current topics were included in the discussion, such as further steps in bilateral and international cooperation, nuclear regulation, safety, security and safeguards questions.

During the meeting the parties also talked about experience and results of recent IAEA missions. HAEA Vice President, Mr László Juhász and Chief of Cabinet, Mr Béla András Balczó also took part in the meeting.

HERCA Board Meeting in the HAEA

Heads Of The European Radiological Protection Competent Authorities (HERCA) held its 29th Board Meeting on 19-20 May 2022 in the Hungarian Atomic Energy Authority partly with personal participation and partly online.

HERCA is a voluntary association of the Radiation Safety Authorities in Europe where they work together in order to identify common significant radiation protection issues and propose harmonization and/or practical solutions towards a common approach for these issues, whenever possible. (These authorities exercise regulatory control on e.g. x-ray machines in hospitals).

It has a significant role in supporting and facilitating the work of authorities as a platform for exchanging experiences, and promotes their work through its activities, periodic and permanent working groups, thus contributing the development of safety culture and the quality of patient care.

HERCA currently operates through 6 working groups: medical, industrial, veterinary, educational, natural sources and emergency preparedness.

Ms. Eszter Rétfalvi, the Supervisory Director of the HAEA, and Mr. Géza Sáfrány, Head of the Radiobiology and Radiohygiene Department of National Public Health Centre presented the radiation protection tasks of the hungarian authorities.

Over the two days, board members accepted the reports presented by HERCA working groups, summarizing their work and achievements since the previous meeting.

The most important topic was 'HERCA-Working Group Emergency Preparedness and Response (WGE) Task Force – Ukraine support' set up by the WGE in March 2022 in connection with the Russo-Ukrainian war.

Mr. Michael Hübel from the European Commission (EC), Ms. Jasminka Joksic from IAEA made a presentation during the two days.



HERCA Board Meeting participants

Nuclear safety challenges of the Russian-Ukrainian conflict

The armed conflict between Russia and Ukraine remains a major challenge for the continuous safe operation of nuclear facilities in Ukraine. At this stage of the war, the situation around and within the Zaporizhzhya NPP is the main cause for concern. This is why the Director General of the International Atomic Energy Agency (IAEA), Rafael Mariano Grossi insisted on personally visiting the site as head of a mission of independent international experts. The visit and results of talks are intended to prevent a possible nuclear emergency at Europe's largest nuclear power plant by ensuring the continued presence of the Agency on the site and by urging the establishment of a safety zone around the plant. On September 11, 2022, the Ukrainian operators shut down the last operating reactor, Unit 6, so all reactors at the plant have been put in cold shutdown.

The international community also continues to keep the issue on the agenda of a number of specialized forum and to assist Ukraine by sending aid deliveries matching the needs of the Ukrainian side. The aid assistance offered by Hungary reached Ukraine on 13 September 2022 as part of an international aid shipment delivered under the coordination of the IAEA.

The HAEA continuously monitors and evaluates information related to the Russian-Ukrainian conflict, with special regard to the nuclear safety situation in Ukraine, follows statements made by international organisations, in particular the International Atomic Energy Agency, and informs the public if necessary.

Regional Workshop organized by the IAEA was hosted by the Hungarian Atomic Energy Authority

From 3rd to 7th of October the Hungarian Atomic Energy Authority hosted the IAEA workshop on Severe Accidents Management and Analyses of off-site consequences. The aim of the workshop was to change information and experience between the participants on the following topics:

- Exchange of information on current national practices and experience in the development of severe accident management programmes and off-site consequence analysis;
- Gained knowledge about the application of risk-informed insights in support of severe accident management guidelines development and relevant experience in Member States;
- Identified challenges faced by Member States in severe accident management and off-site consequence analysis and outcomes of the technical discussion on how these challenges could be resolved.

Accordingly during the workshop, the IAEA experts and the representative experts of the member countries shared their experience, current challenges and ongoing research activities in the field of source term determination, off-site radiological consequence analysis, severe accident management guideline development and risk informed approaches to support decision making. As part of the workshop the Hungarian Atomic Energy Authority offered a visit to the Centre for Emergency Response, Training and Analysis within the HAEA headquarters and explained the various roles and tasks performed by the members of Emergency Response Organization during exercises. The HAEA also invited the safety assessment experts of the Paks NPP to the event to share their knowledge and experience on utilizing insights gained from probabilistic safety assessment techniques for the development of severe accident management guidelines and plant modifications for safety improvements.

Nuclear safeguard

Transport security workshop at the HAEA

A workshop related to the physical protection of the radioactive materials transport was organized by the Hungarian Atomic Energy Authority together with the U.S. Department of Energy between May 2 and 5, 2022, in the HAEA headquarters.

At the event, the representatives of domestic authorities and licensees involved in the physical protection of transports could learn about new international trends, security solutions and good practices through lectures and case studies given by American instructors. The participants could test the different defense tactics to review the effectiveness of their physical protection

through a table top exercise. On the last day, it was also possible to view the physical protection system of a vehicle often used in domestic transports, together with documents and other equipment and containers related to transports.



Participants of the transport security workshop

The participants deemed the workshop useful and effective, and the HAEA remains determined to hold similar trainings and events for domestic specialists in the future, in cooperation with the American side, thereby supporting the development of our country's nuclear physical protection.

Hungary provides guarantee for the peaceful use of nuclear materials to the International Atomic Energy Agency for 50 years

Hungary was one of the first countries to join the Treaty on the Non-Proliferation of Nuclear Weapons (Treaty), which made it entitled to the activities aimed at the peaceful application, research and production of nuclear energy. As a non-nuclear weapon state, our country has committed itself not to produce or acquire nuclear weapons or other nuclear explosive devices. Our country therefore undertook to place all its nuclear materials and facilities under the control of the International Atomic Energy Agency (IAEA), and signed a bilateral comprehensive safeguards agreement with the IAEA, which was promulgated by Decree No. 9 of 1972.

The aim of the safeguards system established on the basis of the Treaty is for the IAEA to be able to prove to the international community that the nuclear activities of the countries it controls and all its nuclear materials are for completely peaceful use.

Since the introduction of the safeguards system - 50 years now - our country has been keeping a strict, officially controlled central and local accountancy of nuclear materials. The Hungarian Atomic Energy Authority is responsible for managing the state's system of accounting for and control of nuclear materials. In addition, domestic facilities keep operational records, and international inspectors can use seals and surveillance cameras on nuclear materials and conduct nuclear measurements.

50 years ago, in addition to new tasks, our country also received new opportunities by joining the safeguards system.

Although the safeguards system is basically aimed at preventing the spread of nuclear weapons, and the states that do not have nuclear weapons, including our country, agreed to renounce the development of nuclear weapons programs, an important part of the deal was that these countries would be provided assistance and they are encouraged – subject to compliance with safeguards – to continue nuclear programs for peaceful purposes.

Since then, many facilities in Hungary have benefited from the funds provided by the IAEA. The greatest help was the continuous training of specialists and the contribution to the creation of the infrastructure without which the Hungarian nuclear energy industry would not be able to function today.

The states that are parties to the Treaty have also agreed that they can only hand over nuclear materials and equipment for peaceful use to any state, if their peaceful use is guaranteed by the international inspection system of the IAEA. The international export control regimes (Zangger Committee, Nuclear Suppliers Group), of which our country has been a member since the beginning, are constantly developing the guidelines for the delivery conditions of these products, which are also followed by our country's export control regulations for nuclear and now nuclear dual-use products.

In order to continuously support the IAEA's safeguards system, the HAEA and the domestic nuclear facilities, research institutes, and companies provide support on a voluntary basis within the framework of a support programme by transferring technical knowledge for both the training of IAEA inspectors and the development of nuclear material measurement methods and equipment. By participating in the support programme, Hungarian specialists have been active participants in international research and development in this field for 30 years now.

The domestic performance of the international safeguards system has always been highly valued by the IAEA: the domestic safeguards system was and still is legally well-founded, the local and national implementation specialists have a high level of knowledge of the measures

necessary to achieve the objectives of the IAEA, and they actively participate in the development of the international safeguards system and in solving the challenges facing the system.



IAEA Headquarter

Additional Protocol Complementary Access Exercise

In the framework of the Hungarian Safeguards Support Program, the Additional Protocol Complementary Access Exercise (APEX) for the IAEA inspectors was held in Hungary, between May 16-20, 2022.

Hungary provides regular and effective support for the maintenance and development of the International Atomic Energy Agency's nuclear safeguards system, mainly in three areas: IAEA's training activities; testing of new measurement equipment and technologies; and the development of new equipments and novel technologies.

The main goal of the APEX exercise is to confirm the absence of undeclared nuclear material and undeclared nuclear fuel cycle related activities in the country. Within these activities the absence of covert mining activities and compliance of the R&D activities of the country with the existing nuclear fuel cycle and declared future plans is to be confirmed. The training of the 9 participants was assisted by 4 IAEA instructors, 3 inspectors from the HAEA and operators of the organizations involved in the training.

During the field exercises, the inspectors practiced various inspection situations and tasks at the Mecsek Environmental Station, Centre for Energy Research, Institute of Isotope Ltd., and Radanal Ltd. The last two days of the training was hosted by HAEA: the participants evaluated their experiences and summarized the lessons learned.

The IAEA representatives thanked the participating institutions and the HAEA for the successful conduction of the course.