

Annual report

2015



PUBLIC LIMITED
COMPANY
FOR RADIOACTIVE
WASTE
MANAGEMENT

Dear Reader

There are a total number of 8347 spent fuel assemblies in the Paks Spent Fuel Interim Storage Facility (SFISF); 451 concrete containers of low and intermediate level radioactive waste under ground at Bábaapáti, in the National Radioactive Waste Repository (NRWR); and nearly one thousand visitors to the new showroom of the NRWR in a three-month period. Briefly speaking, this was a snapshot of 2015 in the life of the Public Limited Company for Radioactive Waste Management. Please, see these subjects in greater detail below.

In Bábaapáti, at the National Radioactive Waste Repository (NRWR), we finalized the excavation works of another sub-surface storage vault of the facility. In July we opened our new interactive visitor center, and since November, the interested people are welcomed by a sub-surface exhibition space too. Since its inauguration in 2008, the NRWR has received nearly 85 000 professional and civilian visitors from all over the world.

At our Paks site, the Spent Fuel Interim Storage Facility, which is an extendable modular storage facility, we are working on building another four storage vaults in addition to the existing twenty. The four new storage vaults are to be commissioned in 2017. In our prospects for the future the SFISF would eventually be extended to 36 vaults, and we would provide storage space for the spent fuel assemblies of the nuclear power plant on an ongoing basis.

At the Püspökszilágy Radioactive Waste Treatment and Disposal Facility (RWTDF), the second phase of the safety enhancement program has already started. In 2015 we modernized the waste selection box. As a result, the work process was completely automated, and the industrial drum scanner improved the safety of reception. Last year's developments will increase the level of standard of waste processing activity, which will be restarted.

The West-Mecsek program which aims to solve the final disposal of the high level radioactive wastes and spent fuel assemblies has reached a new phase: in mid-Novem-



Dr. Ferenc Kereki
Managing Director

ber we started excavating the exploration trench, which is required for important investigations relevant to this multi-decade program, and which will enable geologists to determine the sub-surface ground movements which have occurred in the area during the past millennia.

The Mecsek Environmental and Research Station (MERS), situated near Kővágószőlős in Baranya County, has been in operation under the supervision of the Company since 2014. Its objective is the remediation of the environmental impacts from the uranium mining industry and the preservation of the water resources in the area. The modernization of the relevant technological systems is a continuous process.

Public relations are essential for PURAM. This year, as in previous years, we organized several information-sharing and educational programs in the relevant regions in cooperation with the associations of the surrounding villages. The biennial survey of public perception about the activity and the premises of our company was also carried out. Public acceptance is maintained high due to the informative activities and safe operation of the repositories.

Finally, I would like to express my thanks once more to all the staff for doing such excellent work over the last year. I wish us all good health, persistency, and new achievements.



NATIONAL POLICY, NATIONAL PROGRAM

On 19 July 2011, the European Atomic Energy Community issued a directive on the establishment of a community framework for the responsible and safe management of spent nuclear fuel and radioactive wastes. The Council Directive 2011/70/Euratom stipulates that the member states shall develop and implement a national policy regarding the management of their spent nuclear fuel and radioactive wastes. In order to accomplish this requirement, the Atomic Act requires that PURAM also participates in the development of the proposal for the national policy. This work was completed early last year.

Following its discussion and agreement, the draft containing the professional proposals of our Company was submitted to the Hungarian Parliament, which in turn adopted the document in resolution 21/2015. (V.4.) of the national policy regarding the management of spent nuclear fuel and radioactive wastes.

The national policy concludes the principles applicable in connection with the management of spent nuclear fuel and radioactive waste, and the decommissioning of nuclear facilities. It also lays down the peripheral conditions of the national program.

These principles were the basis for the development of the national program, which is also required to be effectuated by the member states, according to the Directive of the European Atomic Energy Community. As result of the professional consultations, and with the contribution of PURAM, the technical draft of the national program was completed. It was submitted by the persons responsible for this, to the European Commission, within the deadline, which was 23 August 2015. Concurrently, the Hungarian Atomic Energy Authority submitted the National Report regarding the domestic implementation of the Directive, to the Commission.

JANUARY

The first annual transport arrived at the Radioactive Waste Treatment and Disposal Facility.

The annual outage of the Spent Fuel Interim Storage Facility commenced.

FEBRUARY

At the beginning of February, the presidents of local government associations signed the subsidy contract with the Ministry of National Development, followed by the member communities of the associations adhering to the agreement.

The insulation of the baseplate protective concrete was completed at the SFISF, the protective tent was removed.

The technical safety department of PURAM held an internal audit at the RWTDF, no deviations were observed.

MARCH

On March 3rd, the special Physics lecture entitled "Physicists to-be" was presented in the Energetics Vocational School of Paks (ESZI).

On March 10th, the special Physics lecture was organized by PURAM, and presented in the ceremonial hall of the "Leőwey Klára" grammar school, in the town of Pécs.

On March 18th, the staff of the Company presented the special Physics lecture in the "Boronkay György" Technical Secondary School, in the town of Vác.

The first annual transport arrived at the National Radioactive Waste Repository.

On March 24th, the Resident Control Committee of the Social Association for Control and Information (TETT) performed an inspection during the delivery of the low and intermediate level radioactive waste.

APRIL

On April 17th, PURAM staff gave a presentation included in the information series program "Nuclear Energy for All".

On April 24th, we organized the eleventh contest in connection with the "Leó Szilárd" competition in

Chronology of events

Physics and Chemistry for those pupils living in the areas surrounding the Radioactive Waste Treatment and Disposal Facility.

The spent fuel assemblies were placed for their first year storage in the Spent Fuel Interim Storage Facility.

In April, the public opinion survey was carried out in the villages of the information associations which function in the vicinity of PURAM premises.

MAY

On May 11th, we organized in Hetvehely the Niels Bohr contest in Physics and Chemistry for the senior class pupils from member villages of the West Mecsek Social Information and Regional Development Association.

On May 30th, the XIIth Isotope Information Day was held in Kismémedi, at the RWTDF and at the information center of ITT, the local information association.

The I&C reconstruction of the SFISF commenced.

JUNE

On June 2nd, the Group of European Municipalities with Nuclear Facilities (GMF) held a conference in Paks attended by nearly one hundred participants from eight countries. Members of the four regional associations involved in the activities of PURAM also took part in the meeting.

On June 5th, the association near the National



Radioactive Waste Repository organized the 12th „TETT-re Kész Nap” event (a wordplay meaning: ready for action).

On June 18th, PURAM and the West-Mecsek Social Information and Regional Development Association organized a press conference combined with a site walk-down at the location of the explorations for a prospective high level radioactive waste repository in Boda.

JULY

On July 8th, we celebrated the opening of the new visitor center of the National Radioactive Waste Repository in Bataapáti.

The spatial configuration of disposal chambers I-K3 and IK-4 was completed.

The technical draft of the National Program for spent nuclear fuel and radioactive waste management was finalized. PURAM also contributed to the elaboration of the draft.

SEPTEMBER

On September 19th, PURAM was represented at the VIth National Professional Team Competition of the armed security forces, which took place at the police instruction base in Nagytétény. All three of our teams achieved outstanding results, including winning the first prize.

On September 26th, the XIth Compass Day was held in Boda with professional support from our Company. The event was given particular attention due to the research activity which had re-started in the area, and the preliminary results which were presented to interested local citizens.

OCTOBER

On October 3rd, at the XVIIIth IPA Memorial Pistol Shooting Competition our security guards gained an overwhelming victory by winning the first three places.

NOVEMBER

From the middle of the month, field works commenced again in the Western Mecsek. Specialists started to make a 700 m long, 3.5 m wide and 2-6 m deep exploration trench.

DECEMBER

On December 4th, the sixteenth “Nuclear Energy for All” educational conference took place, this time at the University of Debrecen. The Company again prepared a presentation and display boards demonstrating its activities. The event was attended by hundreds of high school and college students.

On December 8th, PURAM held its conventional year-end press conference.



OPERATION

In the initial years of its operation Paks Nuclear Power Plant returned the spent fuel assemblies to the Soviet Union (later Russia) for reprocessing. At the time the reprocessing residues remained in the Soviet Union (later Russia). This procedure became inapplicable following the disintegration of the Soviet Union, and a decision was made to prepare a domestic alternative for closing the fuel cycle. As a first action the Spent Fuel Interim Storage Facility (SFISF) was built as an extensible modular facility providing storage of the spent fuel for fifty years. During that period of time the radiation and heat output of the spent fuel is reduced to a level which ensures safe handling.

The SFISF started operating in 1997. Since then, in parallel with its operation, extension is ongoing even today, in order to meet the storage needs of the nuclear power plant permanently. The operator of the facility has been PURAM, since it was created, however the major equipment of the SFISF are in the responsibility of power plant personnel, who are also involved in the maintenance of these equipment on a contractual basis with our Company.

Each transfer of spent fuel from the nuclear power plant is regarded as a special operation, and it is performed with great care. The fuel assemblies have a hexagonal cross-section, are 3 meters long and weigh 300 kilograms. Following 3 to 5 years of storage in the plant decay pool they are transported from the nuclear power plant in a cask, by a special freight train. In 2015 a total number of 270 spent fuel assemblies were delivered into the store in compliance with strict safety requirements. The activity was performed in one campaign, and

SFISF

Spent Fuel Interim Storage Facility



no outstanding incidents, malfunctions or noteworthy failures occurred during the transportation and storage operations. By the end of the year a total of 8347 spent fuel assemblies were stored in the SFISF.

The operation and maintenance activities are rated on the basis of the radiation characteristics of the facility. The internal radiation conditions of the SFISF are determined by the condition of its



premises, access routes, equipment and installations. These characteristics are stable, as in previous years. The radioactive surface contamination measurements performed did not once exceed the strict control level. This applies to the measurements of radioactive aerosol concentrations in the air, too. We also constantly and closely monitor the radiation exposure of personnel. The data show that the individual dose levels of the operations and maintenance staff workers were only a fraction of the allowable limit values in 2015 too. Similarly good results have characterized the radioactive releases of the SFISF for many years. The amount of radioactive material in gaseous releases is approximately ten-thousandths of the regulatory authority limit values, and the activity in the released effluents was only a millionth of the extremely strict limit values.

At the SFISF we also pay special attention to the physical protection of spent fuel assemblies stored here. That means the spent fuel should be prevented from unauthorized access or illegal use. The physical protection of nuclear materials is also closely monitored by international organizations. The International Atomic Energy Agency (IAEA) and EURATOM also monitor that our country is in full compliance with its obligations under the Nuclear Non-Proliferation Treaty (collectively, this is called safeguards). In accordance with the established practice in the course of such inspections, the storage tubes of the newly-stored spent fuel assemblies are provided with a metallic and an optical seal, and the installed surveillance systems are inspec-

ted. In 2015 a total of five such inspections were performed in the SFISF by the IAEA and EURATOM experts in the presence of assigned HAEA representatives: April 29, June 16-18, July 22-23, and October 28. Finally, on December 7th, the HAEA inspected the site in accordance with the Additional Protocol to the safeguards agreement.

The operation of the SFISF is in full compliance with the legal requirements; the cooperation with the authorities runs smoothly. In 2015 the review of the documents controlling the operation of the SFISF continued. These documents are required for the safe operation of the facility.

The Environmental and Nature Conservation Department of the Government Office for Baranya County inspected the facility twice during the year, on February 24 and September 24. During the inspections the Authority found everything in order.

The SFISF Operation Review Committee - which addresses issues regarding the operation, maintenance and safety of the facility - met on several occasions during the year, and has approved the half-yearly reports submitted to the nuclear safety authority. The Committee and then the authorities also stated that nuclear safety has been fully implemented in 2015. No reportable events occurred.

On the whole, we can say that the SFISF still maintains its outstanding level of safe operation on an international scale. Its operation did not present any additional hazards for humans, flora or fauna in the region. The personnel working in the facility also perform their duties in safe conditions.



INVESTMENT

Based on the current operating license 9308 fuel assemblies can be stored in the twenty existing storage vaults of the SFISF. In order to provide the necessary storage capacity permanently for spent fuel assemblies, in accordance with the delivery schedules of MVM Paks Nuclear Power Plant Ltd., a new module should be commissioned by the end of the second quarter of 2017.

The contract for the implementation of the second phase of the SFISF IIIrd stage extension, was concluded in December 2013. As part of the preparatory actions for building storage vaults 21-24, the high voltage transmission line section which crossed the extension area had to be relocated to a new alignment in 2013. The second step in the preparations was the execution of appropriate ground stabilization works required for the final thirty-three-vault construction according to the establishment license. Simultaneously, the public utilities of the facility, the patrol routes, and the outer fence marking the border of the controlled zone and the associated physical protection systems had to be extended. All these tasks, including the installation of the physical protection systems technology were completed in 2014.

In the spring of 2015 the construction of the one and a half meter thick baseplate and the erection of the walls commenced. The reinforced concrete structure of the building was completed in the fall. Following the disassembly of the formwork, the installation of the main beam and bracings of the charging hall steel structure began. At the end of the year, thanks to the mild weather, the charging hall roof and side-wall coverings could be finished, and the covering of the air-stack followed. In the

meantime engineering technology works started as well: the pin-plates for supporting and securing the storage tubes and the structural elements providing for the movements of the manipulator were installed. Work is on schedule, and it is expected that the extension part be connected to the operating facility, and the commissioning of the new vaults may begin in summer 2016.

Meanwhile, the establishment license, which is the basic document of the extension, had to be renewed, as its validity expired on June 30, 2015. Taking into account the complexity of the licensing process, our Company submitted the application for license to the HAEA in 2014, in order to obtain the new license in time and the works to be carried on without delay. The new establishment license relates to the thirty-three-vault construction.

Based on the preparatory studies developed in 2012, and in order to increase cost-effectiveness, PURAM decided to increase the number of storage tubes of one vault starting with the next extension, but still keeping the current technical and safety standards of the facility. Due to the extension, PURAM submitted the documentation justifying the modification of the environmental operating license, which was approved by the authority as a resolution. Subsequently, the establishment license has to be modified at the beginning of 2016 due to the capacity increase.

Based on the Periodic Safety Report regarding the SFISF, the HAEA required an upgrade of the current safety function instrumentation and control systems. The modernization works commenced in 2015 according to PURAM the modification license, and are ongoing.





PUBLIC RELATIONS

Storing the spent fuel assemblies in the SFISF will be needed for several decades to come. The population's cooperation is essential too, for steady professional work. Therefore, already since the 1990's, before the SFISF was built, Paks Nuclear Power Plant (the operator at the time) has performed substantial information-sharing activity with the help of the local government association, which was founded to represent the people of the region.

Since its establishment, PURAM has also been in close partnership with the Social Control, Information and Local Development Association (TEIT) which was created in 1992. The local governments of the thirteen member villages also work in cooperation with non-governmental organizations (NGOs) of the region. The Control Committee of TEIT member villages inspects both the Nuclear Plant and the SFISF several times a year. Thus, social control is



implemented over these facilities. The members of the committee inspect the handling and storage of the spent nuclear fuel, as well as the safety of the SFISF. They regularly share their observations with the surrounding population. The public forums and the site visits organized for schools, institutions, companies and non-governmental organizations play an important part in the information transfer, as well as the local media reports.

As a result of mass employment of the inhabitants, the involvement of the NGOs and the intensive information-sharing activities, the public acceptance of the nuclear facilities of the region is outstanding.



RWTDF

Radioactive Waste Treatment and Disposal Facility

OPERATION

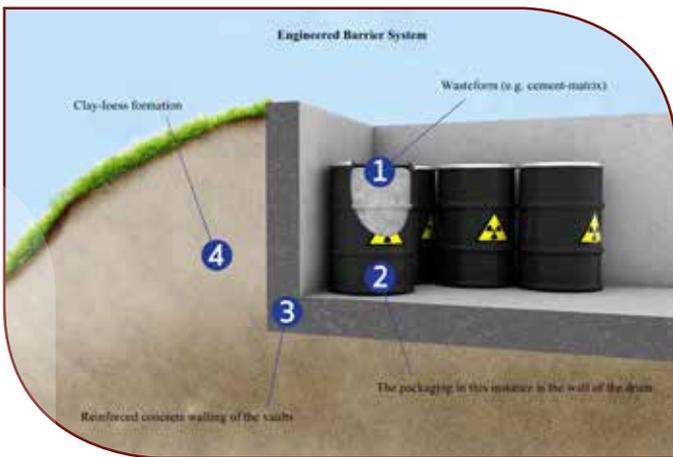
The Radioactive Waste Treatment and Disposal Facility (RWTDF) started its operation on 22 December 1976 near Püspökszilágy and Kismémedi. Since its establishment, the function of the facility is the reception, processing and disposal of low and intermediate level radioactive wastes of institutional origin (not from nuclear power plant). These materials result from industrial, agricultural and medical applications; from production and use of isotopes, as well as from the operation of the experimental training reactor. Depending on what type they are, these wastes are placed in underground near-surface disposal vaults or storage tube-wells.

The facility has been managed by PURAM since its establishment in 1998, and improvements aiming

at safe operation have been continuously implemented. In accordance with national regulations, the operational license also has to be regularly extended.

The RWTDF registered 5 new waste transfer companies in 2015, and 13 suppliers delivered radioactive waste into the facility 28 times in total during the year. Road transportation was taken care of by PURAM in 22 cases, whereas the delivery was conducted by the transferring company in six cases.





This year, the staff of the site took delivery of 3.6 tons, representing slightly more than 2 cubic meters, of solid waste, and 229 pieces of sealed radiation sources.

Taking all of this into account, nearly thirty-two thousand pieces of sealed sources, five thousand cubic meters of solid waste and about ten cubic meters of other waste were stored at the end of last year. The total activity of the materials stored on the site was nearly 330 TBq (terabecquerel).

The core functions of the RWTDF (i.e. waste receipt, transfer, handling and safe disposal) are complemented by additional activities, such as radiation protection, release and environmental monitoring, maintenance, protection and security.

Our company regularly checks the radiological condition of the site and the environment, which is an essential requirement for the safe operation. The RWTDF has its own environmental laboratory, which in 2015, as in previous years, functioned on the basis of a program accepted by the authority: sixty-four samplings and more than 950 measurements were made during the year. These monitoring results showed that the radioactivity level in the environment of the site is equivalent to the reference values of the years 1976-77.

Also the supervisory authorities regularly check the activities of the RWTDF. The Hungarian Atomic Energy Authority (HAEA) executed nine minor inspections and one comprehensive review of the RWTDF. The Environmental Inspectorate performed a site walk-down including samplings on one occasion in 2015. These inspections concluded that the operation of the facility complied with regulations.

Following the operational incident which occurred in December 2013, appropriate measures and improvements have been implemented. In order to start the full-scale waste management activities, approval from the supervisory body (HAEA) was needed. We submitted the application for approval to restore our operational status. The application was approved by the Authority, and, consequently, radioactive waste management will resume in 2016.



INVESTMENT AND SAFETY ENHANCEMENT

At the time when PURAM took over the operation of the RWTDF, one of the first important investments in the framework of the safety-enhancement program was the establishment of a disposal facility. This was carried out by reconstructing the operational building. In the first phase of the program (from 2002 to 2005), site modernization was also performed. The storage space was required for storing the long-lived waste, which had been delivered in the initial period. We laid the foundations for further safety enhancement measures at the same time.

In the second phase, the so-called demonstrational program was finished in 2009. We opened up four disposal vaults and made a selective review of their content in order to determine whether the program would be feasible for the other vaults, and to see how much disposal space could be freed up by this procedure. Once they had been sorted, the wastes were compacted, repackaged and placed back in the vaults, thus increasing safety. Disposal space equivalent to nearly one vault was freed up by applying the demonstrational program. At the same time, due to previously completed developments, the storage area became available for receiving both waste drums and spent radioactive sources. As a result, there is enough space to receive institutional low and intermediate level waste continuously in the coming years.

In 2015, we prepared a new stage of the safety enhancement program: the implementation plans were finalized and the regulatory licensing was performed. The HAEA also issued the establishment and modification licenses required for constructions needed for the works; for building a light-weight hall covering a whole line of basins; for installing the technological systems, as well as for the

activities to be performed inside this construction. The investment would commence in 2016, following the finalization of the public tendering procedure and then the contracting.

Following the operational incident which occurred in 2013, the authorities imposed the implementation of the appropriate actions and developments as a condition for the restart of the processing activity. In 2015, we prepared the documentation required for the approval of the RWTDF operational status restoration and, in parallel, we completed the specified developments. The HAEA issued the operational status restoration license at the end of the year, and the waste conditioning activity is due to commence in 2016, according to the schedule accepted by the authority.

Last year we completed the IT development of the RWTDF: we configured the technological network of the site and we installed the new Waste Record System, and also the WO System, which aids the work order issuing process. The test run will end late February 2016.

In 2015, the design phase of the full-scale reconstruction of the ventilation and air-conditioning system of the operational building ended. We submitted the finalized reconstruction design package for approval to the supervisory authority. The licensing design documentation, which was compiled in accordance with the government decree specifications, was approved by the Hungarian Atomic Energy Authority in the third quarter of the year. In other words, the HAEA issued the construction and modification permits for the implementation of the project. The initiation of the public tendering procedure was the next step. Following this, we received three bids. The completion and evaluation of the bids will be finalized during the first month of 2016. We have submitted our claim for the financial resources required for the implementation to the relevant ministry.

Works are expected to begin in the first half of 2016.

An important development in 2015 was the modification of the radioactive waste sorting box, which is located in the processing hall. This ensures that the lids of the 200 liter waste drums are lifted in an enclosed space with active air-extraction to prevent contamination. During commissioning, we realized that the possible exposure can be reduced



by shortening the operating time. Therefore, the contractor prepared a motor drive for the waste sorting box as part of a separate contract.

To achieve all this, it was not necessary to amend the facility's operating license specifications; only the categorization related to the modification was required, and the approval of the Hungarian Atomic Energy Authority had to be obtained.

In 2014 we finished the construction of a new dispatch center and a new entrance-gate building, and also the guards have been relocated. Two items: the authority acceptance of the extended physical protection system and the financial conclusion of the contract were left for the beginning of 2015. In addition, in the last year, we have installed an exhaust system in the environmental control laboratory of the RWTDF in order to prevent cross-contamination of the samples awaiting processing.

At the end of the year, the development of technologies relating to radioactive waste transportation and handling was included in the framework of procurements: two new radiation source transport containers, gamma and neutron radiation shieldings, lifting equipment accessories, radioactive liquid storage and decanting equipment and self-contained breathing apparatuses were purchased.

PUBLIC RELATIONS

From the beginning, PURAM placed great emphasis on openly and fairly informing the residents of the concerned municipalities. This was done through a series of events, public forums, and also in writing (information publications, articles displayed in the associations' newsletters, video-newsletter coverages). These activities, which also took place in 2015, were greatly fostered by the constructive cooperation with the representatives of the local government associations of the region, as well as by the support from the residents working in the facility and non-governmental monitoring organizations. The control committee of the association is also involved in the information flow. The members of the committee regularly inform the residents about their observations regarding the operation and safety of the RWTDF.

Feed-back on how much confidence there is in the activities of PURAM, on how successful the information-sharing efforts, on how the population's opinion regarding nuclear energy and radioactive waste management is evolving, is provided by the results of the public survey, which has been conducted every two years since 2005. The last representative survey was conducted in the spring of 2015, when 802 people were interviewed. It again demonstrated that the inhabitants of the region have an outstanding general knowledge of the radioactive wastes, compared with the national level, and they have a high degree of trust towards our Company. The majority thinks responsibly about the final disposal of radioactive waste and spent fuel, and they agree that the problem has to be solved now, within the territory of our country. It must be noted that most of these people are aware also of what activities are going on in their environment. Nearly 75 percent of the people living in the concerned communities know that the RWTDF processes radwaste from institutions, not from nuclear power plants.



OPERATION

As a consequence of electricity production by the nuclear power plant, low and intermediate level radioactive waste is also generated. The National Radioactive Waste Repository (NRWR) was established in Bábaapáti for the final, safe disposal of a variety of contaminated protective equipment and tools from the nuclear power plant, as well as similar types of wastes resulting from the future decommissioning. The surface facility of the site has been in operation since December 2008, and the first underground chamber of the final repository was commissioned in December 2012.

The most important events in the history of the NRWR are as follows: the inauguration of the surface part of the facility on 6 October 2008; the reception of the first waste deliveries on 2 December 2008, and the official takeover of the first underground storage chamber-module on 5 December 2012. The same day, 5 December 2012, the first concrete container with low and intermediate level radioactive waste was also placed in its final position. Since then, the reception of drums with radwaste, their embedding into concrete containers and transportation to their final location safely and cost-effectively has become a daily common practice.

In 2015, 51 shipments arrived into the NRWR from the nuclear power plant. With 16 drums in each shipment, this meant a total of 800 drums which were newly delivered to the repository in Bábaapáti. PURAM transports the waste from Paks to the NRWR site by public road. The specially designed vehicle was used once a day, and, on average, three times a week. This year, 126 containers were manufactured; 90 of them have been filled, and all

NRWR

National Radioactive Waste Repository



of these monolithic blocks were taken to their final underground disposal location.

- * The number of drums stored in the surface technological hall is 3221
- * The number of concrete containers placed in chamber I-K1 is 451, meaning that a total of 4059 two hundred liter drums were taken to their final location
- * The total number of radwaste drums delivered into the premises amounts to 6280

Facility equipment maintenance was carried out according to the annual plan. For example, the annual maintenance of the boilers was carried out in June, the structural inspection of the cranes was performed every two months, and the condition of the sludge and oil traps was monitored monthly. No serious failure occurred in any of these systems.



If the need arose, the inappropriate component parts, filters, suspension ropes, etc. were appropriately replaced.

Continuous monitoring in the surroundings of the repository is also part of the operation activities of the facility. As in previous years, the staff of the NRWR carried out an extensive radiation and environmental monitoring in 2015, according to a plan approved the previous year. In addition to air, water, sludge, precipitation and soil inspections, samples of plant and animal origin had to be collected, and then the data had to be evaluated. The results give a good picture of the radiation conditions at the site, the possible radiation exposure of the personnel, and the amount of possible radioactive material of artificial origin in the environment of the premises. Consequently, appropriate measures can be taken if necessary, in order to maintain the safe operation of the repository.

In order to rationalize expenditures, the NRWR keeps its own laboratory which has technological equipment in compliance with domestic and international standards. It is this laboratory, where environmental samples can be prepared, gamma and total beta analyses can be carried out, and also an alpha-beta measuring system has been operating since 2014. The isotopes which may appear in the samples, but which are difficult to detect (e.g. H-3, C-14, Sr-90), are still measured by an external contractor, and the maintenance of the related technological systems is also performed on a contractual basis.

Monitoring carried out in the surroundings of the NRWR in 2015 also showed that the radioactivity levels in the region have not changed compared to the initial state. In other words, the strict radioactive material release limits imposed for the repository have been continuously and fully respected also this year. The activity of the released radio-

nuclides was thousandths or hundred-thousandths of the very strict approved limits. That means the repository is safe and its operation does not present any additional environmental load.

The NRWR accomplished all the tasks required by the authority regarding environmental control, release control and radiation protection, and has also fulfilled its reporting duties. This has also been confirmed by the regular inspections effectuated by the authorities. As from 1 July 2014, the Hungarian Atomic Energy Authority is responsible for the regulatory oversight of the NRWR, HAEA staff carried out inspections on twenty-five occasions during the year. The facility's staff regularly attended continuing training sessions of radiation protection and professional operations.

Considering all the above, the NRWR has had a successful operational year and the planned tasks have been fully completed.

INVESTMENT

A prerequisite for the long-term operation of the NRWR is continuous extension, which is also stipulated by the Atomic Act. We formally fulfill this duty in so-called investment stages.

During the first stage, between 2005 and 2008, the initial main galleries (Western and Eastern inclined shafts) for accessing the underground disposal space were driven, the central building and the technological building of the operational site were erected, and the outdoor facilities were completed in the courtyard.

During the second stage, between 2009-2013, the underground mining works included the driving of the „Long Loop”, the „Short Loop”, and the first



two disposal chambers (I-K1 and I-K2), as well as the building of the surface and the subsurface roads were all achieved. The technological service systems for waste disposal were completed and commissioned. Our Company had already acquired the operating license of the first chamber in September 2012. Consequently, following the sequential trial operations, the underground deliveries could begin.

The facility has been in normal operation since February 2013. However, PURAM had already started the preparations for the third stage of site extension in the autumn of 2012: the development of a new disposal concept and waste disposal system. The aim was to use the space of the disposal chambers more efficiently, thereby reducing disposal costs. The newly developed system consists of reinforced concrete basins - instead of the former reinforced concrete containers - built to accommodate metal containers with compacted waste packages.

When developing the new disposal concept, based on the results of the safety analyses, it was decided to apply a demonstrational and supplemental exploration program too. To achieve this, an investigation heading for the investigation of the first vault field was to be worked out, applying the third investigation chamber and the Western exploring tunnel.

As a consequence of the required safety analyses, PURAM had the establishment license of the repository amended before the task began. This was the fourth amendment to the original establishment license (MTD). Once it was awarded the

newly amended license, our Company was able to start the third stage of the site extension which was to be implemented through several construction phases. Presently three phases are on-going.

So far, in the first two phases; driving of the Western main gallery, the third investigation chamber and the third and fourth chambers (I-K3, I-K4), the drilling of the related pre-borings, the construction and extension of the technological systems in connection with the subsurface spaces started at the end of 2013. We also carried out the relevant investigations. In this period, the surface and the subsurface exhibition space was configured so as to provide enhanced information to the local population. The construction works of the first and the second phases are expected to be completed by June 2016.

In parallel with the construction works of the first two stages, PURAM applied for another amendment to the establishment license (AMTD), referring to the third phase of the third extension stage. The updated establishment (indicated by the letter „A“ in the abbreviation) contains all the elements of the new waste disposal concept:

- * Increased cross-section chamber design
- * Construction of reinforced concrete basins in disposal chamber I-K2, which was driven in the second stage, and in the disposal chamber I-K3 and I-K4 which will be driven in the third stage
- * Configuration of chambers N1 and N2 for the preparation of further extension in the investigated western chamber field

Since we received the recent establishment license in June 2014, as preparation for the third phase of the third extension stage, PURAM initiated the procedure of public tendering for the construction of the reinforced concrete basin and the connected technological service systems in disposal chamber I-K2. The deadline for submitting the tenders was



the end of 2015. Currently, the applications are being processed and evaluated. The announcement of the results and awarding of the contract is expected to happen in the first quarter of 2016.

According to the current establishment license, separate operating licenses are required to be obtained by the Company for all the disposal spaces of the NRWR. The required time of issuance of these licenses is determined based on the waste delivery schedule specified by the Paks Nuclear Power Plant. At present, the operational licensing process for disposal chamber I-K2 is in progress. At the same time, and in parallel with the preparation of the construction of a reinforced concrete basin in the disposal chamber I-K2, we began the procurement of technological process support equipment and machines.

PUBLIC RELATIONS

The residents of the localities surrounding the National Radioactive Waste Repository in Bábaapáti have already systematically received detailed information since the period of geological research preceding the construction. They expressed their supportive opinion, and accepted the construction within a local public referendum in 2005.

The Company still has the support of the local population. This was confirmed again in the spring of 2015 by a public opinion poll, which also gave us positive feedback about our efforts aiming at providing true and objective information to the locals. 800 people were interviewed in this representative survey, which demonstrated that the inhabitants of the region have an outstanding general knowledge of the radioactive wastes, as compared with the national level. The majority thinks responsibly about the final disposal of radioactive waste and spent fuel, and they agree that the problem has to be solved now, within the territory of our country. Most of the locals are aware of the NRWR surface and subsurface facilities in operation, as well as of the on-going further subsurface developments.

Regarding regional communication, the Public Limited Company for Radioactive Waste Management is in contract-based cooperation with the association of the local governments (TETT), which represents the involved villages. The Social Con-



rol and Information Association (TETT) was created in 1997, and contributes to the success of information-sharing with different publications and programs. Local inhabitants working in the facility and non-governmental operation monitoring organizations also support the communication. PURAM specialists regularly meet with people living in the area; for example, on occasions such as the TETT-re Kész Nap (a wordplay meaning: ready for action) or in citizen forums. Publications describing the activities of the Company and its site organizations regularly appear in the regional media, and the information channels of TETT.

The facility built and constantly developed in Bábaapáti has been the center of interest since the opening of the first underground disposal chamber. Also in 2015, it provided space for various professional events and training courses. Hungarian and foreign experts as well as civil society groups are received here on a regular basis. The Company is proud of its achievements in the field of waste management, and its world-class facility.

In order to share information more efficiently, to make it more easily understood by the population, the configuration of an up-to-date visitor center, and the modernization of the underground exhibition space began in 2014. The new information center of the NRWR opened for the public in the summer of 2015. After watching the spectacular movie about the facility in an almost futuristic, interactive hall, visitors interested in obtaining more information are able to browse using touch-screen consoles. The underground exhibition hall was opened in the autumn of 2015.

Since its inauguration in 2008, the National Radioactive Waste Repository has received nearly eighty-five thousand guests from almost all over the world.



Research Program for the Final Disposal of the High Level Radioactive Wastes and the Spent Nuclear Fuel

STRATEGY

In our experts' opinion and according to the internationally agreed standpoint, the high-level and long-lived radioactive waste can be disposed of only in a suitable host rock of a deep geological repository. Such a facility may be suitable for direct disposal of spent fuel, and it could also accommodate waste generated during the reprocessing of spent fuel assemblies. The long-lived radioactive waste, which at present is temporarily stored in the RWTDF, may be also taken to such a repository.

Accordingly, the repository may be suitable by design and construction for the final disposal of the high level radioactive wastes, the long-lived radioactive wastes and the spent nuclear fuel. Based on preliminary explorations and research, the potential hosting formation of the repository is the Boda claystone formation (BAF - Boda Aleurolit Formation) located in the western part of Mecsek hills.

ACTIVITIES

PURAM restarted geological explorations in the West-Mecsek region in 2014. Some of the works, which were scheduled for the second period of the first surface phase, have been completed, and others are still ongoing according to the research plan approved by the mining authority (Pécs). This is the continuation, and will be the completion of, the first research phase which was interrupted in 2006. The purpose of the current investigations is the general characterization of the BAF, the determination of its geometry, its classification, the collection of geological data and information necessary for the safety assessment, and to prioritize the target areas of further research. That will be the end of the first surface exploration phase.

Field work started in 2014, with sinking two prospect drillings in the southern part of the exploration area. The deepening of prospect drilling BAF-2 was followed by BAF-1A, and local inspections were also performed. We stopped at the borehole depth of 913.6 meters at the first prospect drilling, and 474.6 meters at the one for BAF-1A. The full documentation and sampling program of the field work has been completed, and in 2015, the detailed technical evaluations were also carried out.

Our Company did not plan further drillings in the past year because of the unavailability of the necessary financial resources. We included the hydrogeological reambulation, and the licensing of trenching in the first half-yearly plan; and the exca-



vation and the investigation of the B-3 exploration trench in the second half-yearly plan.

In 2015 the hydrogeological reambulation, i.e. the harmonization of map details and other, recently acquired data and information was completed as planned. We have also performed the associated water discharge measurements and samplings.

As part of the professional preparation of the exploration trench B-3, we performed the geophysical studies of the site, including multi-electrode logging and engineering geophysical probing, but the evaluation of the results stretched over to the beginning of 2015. Based on these data, the main parameters of the exploration trench could be determined: the location line, the zoning, the depth. The field works could start only in the last quarter, in October, following the complicated and complex establishment licensing process, and conclusion of the contract. It was then that we began shaping the exploration trench. Thus, the activity will stretch over to the first half of 2016. The professional directions and the technical supervision of the completion of the exploration trench is the responsibility of PURAM specialists.

Our Company is also responsible for the safe storage of the drill core material. The rock samples obtained from trial borings effectuated previously in the Western Mecsek are stored provisionally in a rented building at the Kővágószőlős site. Although the designs of the site redevelopment and drill core sample final storage are ready, resources for the reconstructions have not yet been made available.

The Boda claystone formation has been monitored for a long time, and it also continued during the last year. In addition to the conventional environmental and hydrogeological studies, a high-precision GPS measurement campaign took place in late autumn. However, we did not continue the seismo-tectonic monitoring. Following the conclusion of measurements at the end of summer 2015, the comprehensive evaluation of data which had been collected in a period of over 10 years was accomplished as a summary.

PUBLIC RELATIONS

The population in the region of the high level radioactive waste repository research has been kept informed since the activities started. The citizens of the area know of the repository development plans, and accept the research which is aiming at site selection.

Since the beginning of its operation, PURAM, the company managing the research program, has

been in regular contact with the West-Mecsek Social Information and Regional Development Association (NYMTIT), which was formed in 1996 as the local government association of nine villages representing the region. Similarly, the information-sharing with the non-governmental organizations and the residents of the area is continuous. The Company organizes an information-sharing tour in the villages of the Association every two years, regularly issues newsletters and video-newsletters in cooperation with the NYMTIT, and organizes a competition in Physics and Chemistry for primary school students every year. Compass Day, the great annual information-sharing event, is also organized in cooperation with the NYMTIT. However, our company participates in other civil events too, in order to present what is going on in the region to the widest possible public. All of these programs and informal relationships are meant to create favorable conditions of public support for the prospective establishment of the repository.



Feed-back on how successful the information-sharing efforts, on how much confidence there is in the activities of PURAM, on how the population's opinion regarding nuclear energy and radioactive waste management is evolving, is provided by the results of the public survey, which has also been conducted in this region every two years since 2005. The last representative survey was conducted in the spring of 2015, when 1003 people were interviewed. It again demonstrated that the inhabitants of the region have an outstanding general knowledge of the radioactive wastes, compared with the national level, and they have a high degree of trust towards our Company. The majority thinks responsibly about the final disposal of radioactive waste and spent fuel, and they agree that the problem has to be solved now, within the territory of our country. It is important to highlight that more than 70 percent of the people interviewed in the West-Mecsek region know that research related to the final disposal of high level radioactive wastes is on-going near their place of residence. Also, there is a very high level of confidence regarding the reliability of the investigations.



MERS

Mecsek Environmental
and Research Station

OPERATION

The uranium mining and ore processing started in the Mecsek hills in 1955, and in 1997 it was decided to cease these operations. The shutdown of the mine, the landscaping, and environmental protection have become priority tasks of the state.

The environmental impacts from the industrial activities associated with uranium mining have necessitated recultivation. This activity was completed by the end of 2008. However, the preservation of drinking water bases in the surroundings involves environmental responsibilities in the long-term for the decades to come; such as cleaning of contaminated surface waters and groundwater, environmental control monitoring, aftercare and maintenance of the rehabilitated areas. According to the decision by the Hungarian National Asset Management Inc. this long-term remediation and environmental protection work came into the sphere of responsibilities of the Public Limited Company for Radioactive Waste Management on 22 April 2014. Mecsek Environmental and Research Station (MERS) was created to implement this decision.



Water is treated in two large water purification units: the Minewater Treatment Plant for the removal of uranium-contaminated water and the Chemical Water Treatment Plant situated in the vicinity of the tailings ponds near Pellérd. This latter plant purifies the contaminated high salinity waters. Furthermore, PURAM became responsible for the operation, and for the electrical and mechanical maintenance of the smaller special remediation systems and establishments, as well as all for the contaminated and uncontaminated surface water catchment, control and release systems. Without the pumping and cleaning of uranium-contaminated minewaters, and without maintaining the tailing ponds, the wells of the waterworks of Pécs and the surrounding municipalities would become contaminated in a short period of time. Therefore, treatment is need 24 hours a day, for at least a further 30-40 years. This sphere of activities involves continuous management and control of water treatment, including the required operation and monitoring tasks.

As a continuation of previous monitoring activities, MERS carries on operating the hydro-geological, radiological, geophysical, and geological environment monitoring systems, in order to be able to respond to any possible emergency in its early stage. The prediction and modeling of the occurrence and propagation of any possible emergency is still a priority task. The evaluation and analytical activities control the interventions and the rational use of the monitoring network.



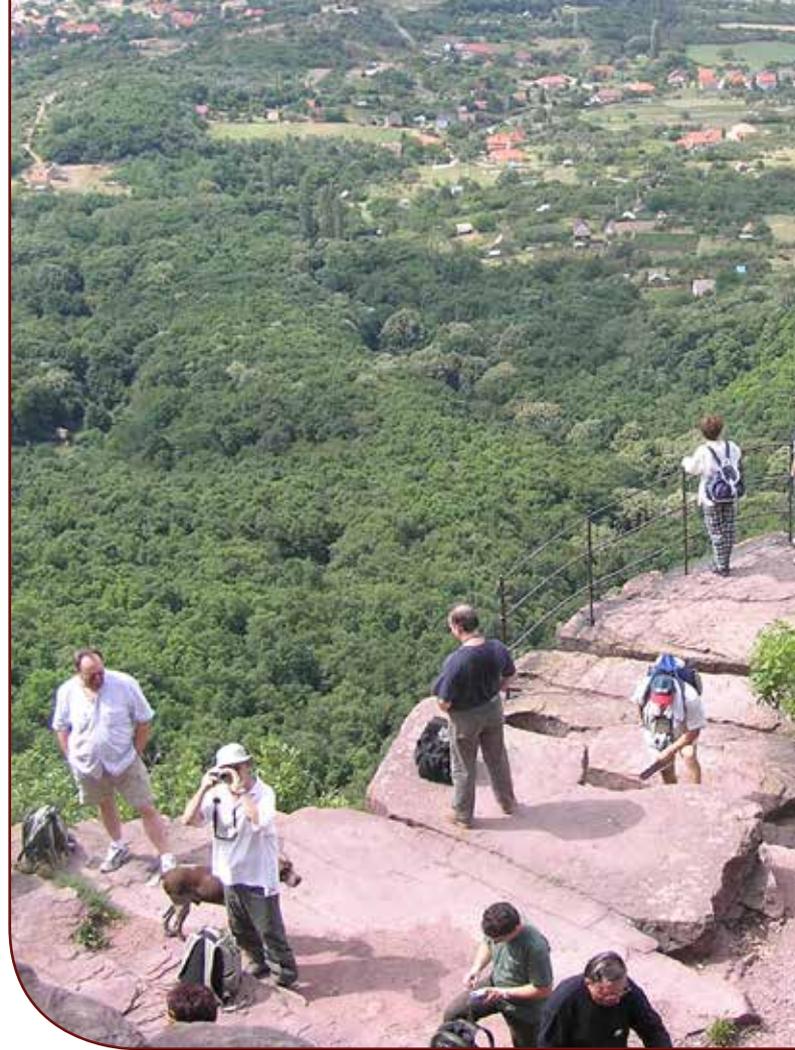


INVESTMENT

Parts of the abandoned spaces of the mines were filled by waters in the first quarter of 2015, while other parts affected by mining are still being filled. In addition to the treatment of these waters, a new task to manage is the treatment of the uranium-contaminated excess minewater which appears on the surface. This requires transformation and expansion of the current water treatment and water management systems. Last year, the increase in uranium-contaminated minewater resulted in higher operational expenses, and led to the need for substantial investments to be initiated and to be continued in the following two-three years. The investments are aimed at reconstructions and developments in the minewater treatment plant, including modification of the water inlet and discharge system, installation of new pipe sections, as well as installation of new pipelines between the former ore dressing plant and the tailings ponds.

In the first phase of the investment which started in 2014, the new gravitational and pressure pipeline sections have been installed, and the associated structural modifications were executed, and part of the required technological developments was also implemented by the end of this year. The uranium concentrate dryer and the expansion of the sorption unit have also been completed.

Among the tasks for the coming years will be to install 2 kilometers of pipelines at the ÉDÜ tailings ponds; to extend the waste water drain-pipes under waste dump no. 1 and the adjacent „Bakonya” pipelines as far as the drain well S3; and to build the related pit. We plan to build a so-called seepage-drain with its related pit under waste dump no. 3, and also to site the bottom of the lake over the well-bore S4. Additional tasks to be executed are the connection of the catchment under waste dump no. 2 to „Bakonya” waste water pipelines. This involves installing an approximately 800-meter long new pipeline section in the future.



PUBLIC RELATIONS

The citizens living near the facility are getting to know its operations better. From the beginning, PURAM has made efforts to openly and fairly inform the residents of the concerned municipalities, and it also relies on the newsletter, video-newsletter and web-site of the regional association (NYMTIT). The activities of the MERS are also greatly supported by the residents working in the facility.

National and international professional interest regarding uranium decontamination at Kővágószőlős has been significant for many years. The Research Station has, on several occasions, provided its premises and experts for training courses organized by the International Atomic Energy Agency in our country annually. Students from national institutions of higher education also regularly visit here.

In order to provide information to the authorities and the public, we continue to operate the internet geographical information system founded within the framework of an ISPA project in 2005, and which contains a citizen and authority publication module. This system is capable of providing information continuously about the recultivation method, the ongoing works, or the latest measurement data.

FINANCES

The Company Annual Business Plan for 2015 was accepted by the Hungarian National Asset Management Inc., the organization exercising ownership rights, on 20th April.

The activities of PURAM are financed from two sources: on the one hand by the Central Nuclear Financial Fund and on the other from the chapter-managed budget of the Ministry of National Development.

Act no. C. of 2014, of the 2015 central budget of Hungary, defines the major budget appropriation groups which may be financed from the Central Nuclear Financial Fund, and the associated amounts, as well as the annual appropriations for the chapter of uranium ore mine long-term environmental remediation.

The Central Nuclear Financial Fund Committee discussed the 2015 Work Program on 12th March 2015, and submitted it for approval to the Minister with responsibility for the Fund. He approved the Program on 30th April.

Following the adoption of the budget, the changes necessitated the regrouping of the appropriations, which was approved by the Ministry of National Development at the end of the year.

The modified earmarked income of the Central Nuclear Financial Fund in 2015 was HUF 26.9 billion, and the realized actual value was HUF 27.6 billion. The total amount of the actual expenses was HUF 15.5 billion, as planned. The balance of the incomes and expenses covers the expenses arising in the Fund on long term. The total amount of savings on the account of the Nuclear Financial Fund managed by the Hungarian Treasury was HUF 255.1 billion as of the end of 2015.

FINANCIAL STATEMENT

Item No.	Item	2015 actual in HUF 1000
I.	Net sales revenue	74
II.	Value of activated own performance	40 671
III.	Other revenues	5 110 479
IV.	Material expenditures	2 773 012
V.	Personal expenditures	2 288 828
VI.	Depreciation	1 954 463
VII.	Other expenditures	56 705
A.	RESULT OF OPERATIONS (BUSINESS ACTIVITY)	-1 921 784
VIII.	Revenues from financial transactions	8
IX.	Expenditure on financial transactions	54
B.	PROFIT FROM FINANCIAL TRANSACTIONS	-46
C.	NORMAL BUSINESS PROFIT	-1 921 830
X.	Extraordinary revenues	3 639 027
XI.	Extraordinary expenditures	1 723 366
D.	EXTRAORDINARY PROFIT	1 915 661
E.	PROFIT BEFORE TAXATION	-6 169
XII.	Tax to be paid	
F.	PROFIT AFTER TAXATION	-6 169
G.	BALANCE	-6 169



INTERNATIONAL RELATIONS

PURAM specialists are convinced that it is essential to use international experience for the successful operation of the Company. The Atomic Act also stipulates the basic principle, according to which the safety of nuclear energy applications should be promoted by incorporating the results of national and international scientific research. This applies also to radioactive waste and spent nuclear fuel management, and to the accomplishment of related research and development tasks. Scientific and technical development or harmonized coordination of research work cannot be achieved without the use of foreign experience.

With this end in view, in 2015, our Company also endeavored to be present at many international forums, and to be represented at the meetings of the professional governing bodies which act under the auspices of the Vienna-based International Atomic Energy Agency (IAEA) or the Paris-based Organization for Economic Co-operation and Development - Nuclear Energy Agency (OECD NEA).

In April, Dr. Balázs Molnár, Senior Expert, took part in a conference of the RWMC; the OECD NEA radioactive waste management committee. In July, Bálint Nős, Director of Strategy and Technology, went to the IAEA International Radioactive Waste Technical Committee (WATEC) meeting.

Our Company is permanently present in the expert-level working groups of the radioactive waste management committee (RWMC). Last year, our specialists were present - among other meetings - at discussions of specialist groups, on the development of safety reports supporting regulatory licensing, the methods for obtaining public confidence, the questions of disarmament, and the problems of long-term preservation of data and information.

In May 2015, the fifth review meeting of the joint convention on the safe management of spent nuclear fuel and radioactive waste was held in Vienna. Our country has been a member of the international convention, which was established under the auspices of the International Atomic Energy Agency, since 2001. In 2014, similarly to other participating countries, we submitted a written country report. Based on this document, Hungary reported at the review meeting on the activities and experiences of the past three years. On behalf of PURAM, Dr. Balázs Molnár, Senior Expert, presented the latest achievements in the development and operation of the radioactive waste repository.

In 2015, as in previous years, many of our staff had the opportunity to gain new professional experiences at IAEA courses and workshops. Similarly, within the framework of technical cooperation coordinated by the IAEA, PURAM has regularly received foreign professional visitors, mainly in its facilities. In September 2015, for example, four Romanian specialists from their National Physical and Nuclear Research Institute visited the PURAM sites. We also received several other foreign delegations organized by the IAEA during last year.

Since 2009, PURAM has been a member of the governing board of an organization dealing with the establishment of deep geological repositories (Implementing Geological Disposal of Radioactive Waste Technology Platform), which is partly funded by the European Commission. The organization has already more than 125 member institutions and businesses, mainly in Europe. The main event of the Platform, the 7th Exchange Forum, was organized last year in London, and also the specialists of our Company were there.

In addition to the cooperative systems related to large international organizations, PURAM is constantly trying to maintain and develop bilateral professional relations with organizations from other countries. Among these, one of the most important partners is the French company ANDRA, which has a world-class radioactive waste management program. Our multi-year collaboration with ANDRA is of outstanding significance, and it is based on mutual professional respect. This partnership has also contributed to that the members of the French National Review Board (CNE), who are independent senior scientific advisors of the French government on radioactive waste and spent nuclear fuel management, paid an honorable visit to the Bábaapáti National Radioactive Waste Repository, during their annual professional study tour in 2015.

