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SÚRAO
RADIOACTIVE
WASTE REPOSITORY
AUTHORITY

ANNUAL REPORT 2015

SÚRAO'S MISSION

The Radioactive Waste Repository Authority (SÚRAO) is a state organisation established under the provisions of Section 26 of Act 18/1997 on the peaceful uses of nuclear energy and ionising radiation (the Atomic Act) and on amendments to certain other Acts. SÚRAO's mission is to ensure the safe disposal of existing and future radioactive waste in compliance with the requirements of nuclear safety and human and environmental protection.

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RNDr. Jiří Slovák
Managing Director

MANAGING DIRECTOR'S INTRODUCTION

Dear friends, colleagues, ladies and gentlemen,

The Radioactive Waste Repository Authority (SÚRAO) has fulfilled its principal mission – statutory responsibility for the safe disposal of all radioactive waste produced in the Czech Republic – since 1997 of which the continued safe operation of our three repositories provides ample proof. It is not and never has been an easy task; indeed, it is the result of the responsible and professional everyday work of all of our staff. During our 17 years of existence we have had to face a range of challenging situations and have made many important decisions aimed at enhancing the safety of our repositories, some of which, admittedly, were not totally successful. The Authority occupies an important position in the overall radioactive waste management system and is well prepared for the challenges it will face in the future.

Via this Annual Report we aim to provide you with an update on both our activities and results achieved in 2015.

All three repositories for low-level and intermediate-level waste were operated in compliance with relevant licences which was confirmed by all the inspections performed during the year by the State Office for Nuclear Safety and the Czech Mining Authority. With the aim of improving the quality and standards of waste disposal, preparatory studies for the reconstruction of the Richard repository near Litoměřice were launched. We continue to devote particular attention to existing repositories and their safe operation as well as to transparent communication with the public in their surroundings. The Richard Civic Control Commission was established in 2015 comprising representatives of the town of Litoměřice as well as of the surrounding communities and the Ústí nad Labem region. In accordance with the amended Atomic Act, annual contributions to communities in whose areas a low-level or intermediate-level waste repository is operated have been increased from CZK 3 million to CZK 4 million.

As regards the development of the deep repository for high-level waste and spent nuclear fuel, decisions concerning the first stage of geological investigation came into force during the year aimed at reducing the number of potential sites from 7 to 3 – 4. Particular attention will always be devoted to the safety of the future repository and each stage of the assessment and gradual reduction in the number of potential sites will include detailed analysis and proof of site feasibility and long-term safety. Acceptance of the future solution by the communities concerned will form an integral part of the final decision on the selection of candidate sites and, eventually, the final site. SÚRAO has always been and continues to be committed to communicating with the communities concerned in an open and transparent manner. Relevant legislation was approved during the year concerning the payment of financial contributions to local communities in whose areas investigation areas for specific encroachment into the Earth's crust were identified for the disposal of radioactive waste in underground facilities. Contributions paid to the communities concerned for 2015 totalled CZK 71 936 705.

Certain geological work ensuing from the decision of the Ministry of the Environment concerning the identification of investigation areas for specific encroachment into the Earth´s crust commenced in 2015. This concerned preparatory work, e.g. implementation projects concerning geological work for all 7 areas, the presentation of planned field and laboratory work to the general public, communication with land owners in individual areas, reviews of drilling and geophysical work performed in the past and the preparation of maps and other documentation (aerial photographs).

SÚRAO continued with the development of the Bukov underground research laboratory which will be used to gather arguments, data and characteristics from the relevant depths of the rock environment for the assessment of the safety of the future deep repository. The taking of certain measurements and initial research work commenced during the Bukov construction phase.

The development of a waste disposal container continues into the second year. This project, which concerns engineered barriers in general, is of crucial importance and will significantly impact the technical, safety and economic solutions of the future deep repository disposal system. The container must meet all the relevant criteria in terms of required lifetime and safety. We continue, in cooperation with the Centre for Experimental Geotechnics of the Czech Technical University in Prague and ÚJV Řež, research activities relating to the DOPAS international project concerned with the construction of experimental sealing plugs for use in deep repositories. SÚRAO is also actively involved in a number of other international research projects both at the bilateral and multilateral levels, including membership of the Steering Committee of the Implementing Geological Disposal Technology Platform (IGD-TP).

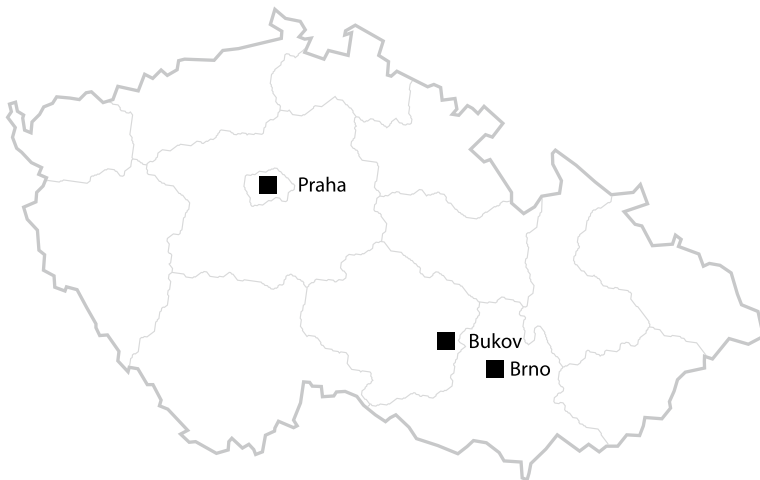
Due to active involvement in international cooperation including with ANDRA, the French agency, the Authority´s level of prestige has increased considerably; two Memoranda of Understanding have recently been signed with POSIVA, the Finnish agency and the Italian company SOGIN.

I consider the activities of the Working Group for Dialogue on the Deep Repository to be a great success. Transparency makes up a basic value which must be respected in all areas in which the state is involved, both at the national and international levels. Discussion on this issue concluded that the Working Group should be incorporated into the Government Council for Raw Materials and Energy Strategy, which was duly implemented at the beginning of 2015. A further important achievement of the Working Group in 2015 consisted of the preparation and approval of draft legislation relating to the involvement of communities in the process of the siting of the deep repository for high-level waste. This draft legislation was subsequently included in the Government legislation plan for 2016.

Finally, allow me to say that, as in previous years, SÚRAO successfully fulfilled its mission in 2015. We continued to operate our radioactive waste repositories safely and in compliance with international standards and, in cooperation with leading Czech experts and foreign colleagues, we continue to closely follow and, where relevant, subsequently implement the latest research and development trends in the field of radioactive waste management.

It is my pleasure once again to express my thanks to all SÚRAO's employees without the unstinting efforts and invention of whom we would not have been able to achieve such highly satisfactory results.

URL Bukov



The Bukov Underground Research Facility (Bukov URL) consists of a unique laboratory which will assist in collecting data for the assessment of deep geological repository safety and its optimum technological design.

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CURRENT SITUATION IN RADIOACTIVE WASTE MANAGEMENT

Low-level and intermediate-level waste make up the largest category of radioactive waste in terms of volume. This type of waste, liquid or solid, is generated during the operation and decommissioning of nuclear reactors and when dealing with ionising radiation sources and, since its radioactivity level decreases considerably after a few hundred years, it can be disposed of in near-surface repositories. The technology for the processing and conditioning of such radioactive waste prior to its disposal is well-established and is fully implemented in the Czech Republic.

Low-level and intermediate-level waste generated at nuclear power plants is stored at a surface disposal facility located within the Dukovany nuclear power plant (NPP) complex. The facility's total disposal capacity of 55,000m^3 (around 180,000 drums of 200 litres each) is able to accommodate all the waste that it is estimated will be generated at the Dukovany and Temelín NPPs, provided that the waste meets acceptability criteria, as well as that low-level and intermediate-level waste which will have to be stored following the decommissioning of both nuclear power plants. In addition, this disposal facility is partly used for the disposal of institutional waste.

Low-level and intermediate-level waste generated by the industrial, research and medical sectors is disposed of at the Richard (near Litoměřice) and Bratrství (near Jáchymov) repositories; in addition, the Dukovany repository is partly utilised for this purpose.

The Richard repository was constructed on the site of the former Richard II limestone quarry (underground, beneath the Bídnice hill). Institutional waste has been disposed of at this repository, which has a total RW disposal volume of 10,249m^3, since 1964. It is possible that the current free capacity of the Richard repository will be fully utilised by 2025 depending on the real volume of waste to be disposed of at the facility issuing from environmental damage resulting from the activities of ÚJV Řež. Using experience of repository operation to date, and in compliance with a comprehensive safety analysis, it is envisaged that it will be possible to expand the disposal capacity of the Richard repository by adapting currently unused space within the existing repository complex. SÚRAO has, in the past, adapted several mined spaces at the Richard facility for repository use and, based on experience gained, predicts that adaptation could be completed within two years of the issuance of the relevant licence by the State Office for Nuclear Safety (SÚJB).

The Bratrství repository is designed for the disposal of waste containing naturally occurring radionuclides. It was constructed in one of the mined cavities of a former uranium mine and contains five chambers with an overall capacity of approximately 1,200m^3. The facility was put into operation in 1974. The capacity of the Bratrství repository will soon be fully utilised and it is envisaged that the disposal of waste at this repository will end in around 2020.

The operation of all Czech repositories, including the monitoring of the now-closed Hostim repository, is managed by SÚRAO in compliance with the relevant licences granted by the SÚJB and, in the case of mined cavities, in compliance with permits and licences issued in accordance with mining regulations.

A certain amount of long-lived low-level and intermediate-level waste is also generated which cannot be disposed of in existing near-surface facilities. For this type of waste, special requirements are in place concerning the method and quality of conditioning necessary for its storage and subsequent disposal in a deep geological repository (DGR). This waste is currently stored either by waste producers or by SÚRAO.

High-level waste and spent nuclear fuel, classed as waste, will also be disposed of in the future DGR. Nevertheless, waste producers reserve the right to decide on its potential further use. Until such time as the DGR becomes operational, this waste will be stored by its producers.

OPERATION OF THE DUKOVANY REPOSITORY

The Dukovany repository is operated by SÚRAO through ČEZ, the Czech power company, on a contractual basis (in accordance with the Atomic Act, Article 26). The acceptance of waste to be disposed of at this repository and certain other responsibilities, such as inspection, are carried out directly by SÚRAO in compliance with operating regulation P147j - limits and conditions for the safe operation of the Dukovany repository and other documents issued by SÚRAO or ČEZ, the contractor.

Normal repository operation during the year included an inspection of buildings and equipment, the maintenance of buildings, land, machinery and electrical equipment, radiation protection, physical protection, emergency preparedness and nuclear safety.

In 2015, the repository accepted 933 disposal packages containing radioactive waste (204m^3) of which 869 metal 200-litre drums, 48 storage pallets, 11 items of unpacked waste and 5 non-standard disposal packages. Disposal packages containing radioactive waste were placed in vaults D05 and D07.

The Dukovany NPP (EDU) delivered for disposal a total of 732 waste disposal packages (148.6m^3), of which 116 disposal packages of bituminised waste, 80 disposal packages of unstabilised waste and 536 waste disposal packages of used ion exchangers and sludge solidified into an aluminosilicate matrix.

The Temelín NPP (ETE) delivered for disposal 155 waste packages (32.4m^3), of which 140 waste packages of bituminised waste and 15 waste packages of unstabilised waste.

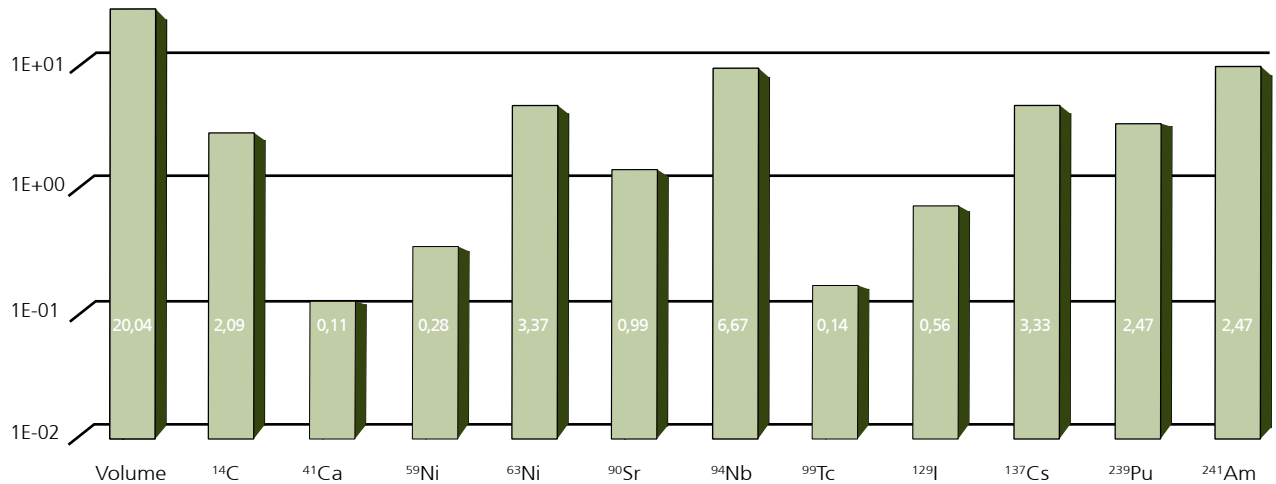
The Nuclear Research Institute Řež (ÚJV Řež) delivered for disposal 35 waste packages (20m^3), of which 30 storage pallets containing unstabilised bulky lump waste and 5 non-standard waste packages. In addition, 3m^3 of unpacked lump waste delivered from ČEZ´s Tisová power plant was disposed of at the Dukovany repository.

The monitoring of the repository and the surrounding areas was performed in accordance with the approved monitoring programme; no breach of the limits and conditions for the safe operation of the Dukovany repository were detected during the year. Four inspections were conducted by the SÚJB at the Dukovany repository during 2015; no serious breaches were discovered.

Basic information on waste disposed of during 2015 is provided in the following table:

Dukovany repository during 2015:		
Volume of waste disposed of	m^3 of waste packages (WP)	204 / 933
of which from EDU	m^3 / WP	148.6 / 732
of which from ETE	m^3 / WP	32.4 / 155
of which institutional waste	m^3 / WP	23 / 46
Mass of the accepted waste	T	298

Overview of the utilisation of the volume and inventory limits of the Dukovany repository as at 31 December 2015



Utilisation (%), Dukovany repository

		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m^3]	55.000	11.027	20.05	43.973
^{14}C	[bq]	1.00E+13	2.09E+11	2.09	9.79E+12
^{41}Ca		3.00E+11	3.16E+08	0.11	3.00E+11
^{59}Ni		3.00E+12	8.32E+09	0.28	2.99E+12
^{63}Ni		3.50E+13	1.18E+12	3.37	3.38E+13
^{90}Sr		1.00E+13	9.90E+10	0.99	9.90E+12
^{94}Nb		3.00E+10	2.00E+09	6.67	2.80E+10
^{99}Tc		1.00E+12	1.39E+09	0.14	9.99E+11
^{129}I		1.00E+11	5.60E+08	0.56	9.94E+10
^{137}Cs		3.00E+14	9.98E+12	3.33	2.90E+14
^{239}Pu		6.00E+09	1.48E+08	2.47	5.85E+09
^{241}Am		1.00E+10	6.59E+08	6.59	9.34E+09

OPERATION OF THE RICHARD AND BRATRSTVÍ REPOSITORIES

Both nuclear facilities – the Richard and Bratrství repositories – were operated by SÚRAO during 2015 in compliance with the relevant licences issued by the State Office for Nuclear Safety (SÚJB) and the Czech Mining Authority (ČBÚ). Normal operation of both repositories covered the inspection of the mined cavities, the maintenance of buildings and equipment, machinery, electrical fittings and land. SÚRAO was also responsible, in accordance with the relevant SÚJB licences, for the physical protection, radiation protection, emergency preparedness and nuclear safety of these repositories.

In 2015, 442 waste packages containing radioactive waste (95.5m^3) were disposed of at the Richard repository with a total mass of 153t. 68 waste packages (14.7m^3) were disposed of at the Bratrství repository with a total mass of 24t.

The geotechnical and hydrogeological parameters of the Richard and Bratrství repositories were monitored regularly throughout the year. Both facilities were operated in compliance with the relevant statutory safety requirements and legal regulations. Radiation monitoring of the repositories and surrounding areas was carried out in accordance with approved monitoring programmes. SÚRAO's performance was supervised during 2015 by the SÚJB (five inspections at the Richard repository and two inspections at the Bratrství repository) and the relevant mining supervisory bodies (four inspections at the Richard repository and none at the Bratrství repository).

LABORATORY FOR WASTE CONTAINER TESTING

The test laboratory at the Richard repository is used to test containers designed for the transport, storage and disposal of nuclear material and radioactive emitters (with a mass of up to 3,200kg) as well as to test radioactive substances of special form. Two B(U) type transport containers and two prototype containers were tested during 2015; in addition, the validity of four certificates was extended. The laboratory also provided consultancy services to container users and manufacturers throughout the year. The laboratory's total income for 2015 amounted to CZK 319.8 thousand.

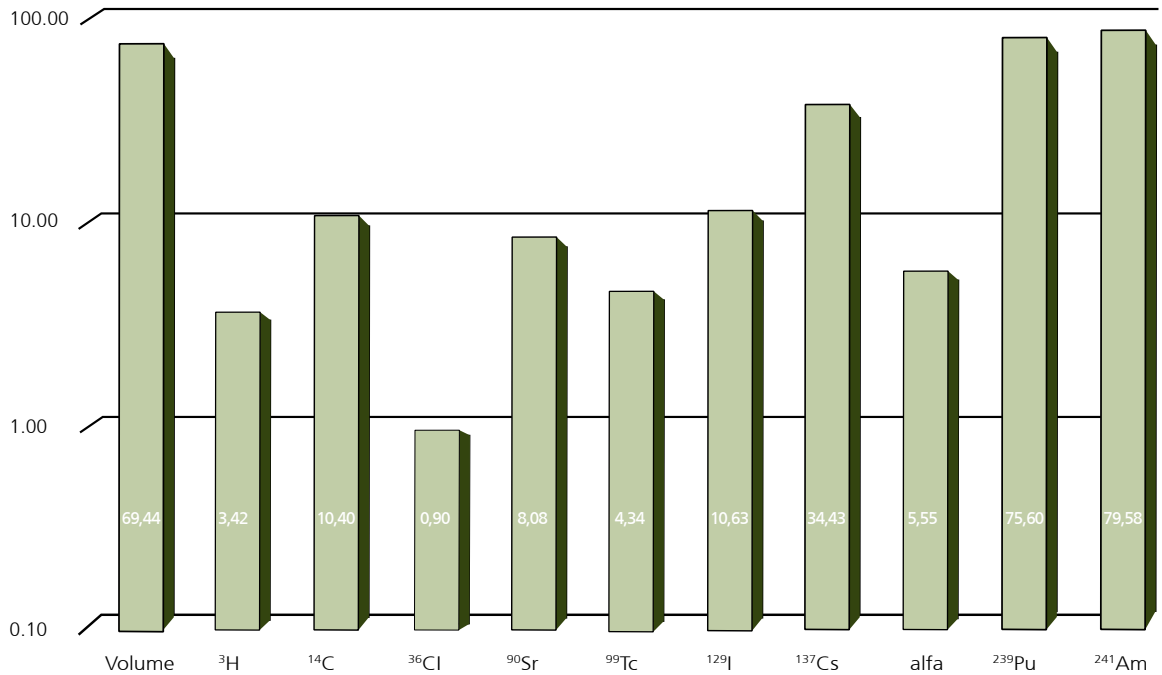
The Richard repository is currently being used for the temporary management of certain defined radioactive waste (according to an SÚJB Decision issued in compliance with the Atomic Act, Article 26, paragraphs 3j and 3k and Article 31, paragraph 4).

In 2015, pursuant to the updated Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic, SÚRAO launched an introductory study concerning the reconstruction of the Richard repository the objective of which consists of the assessment of the technical possibilities of repository reconstruction aimed at ensuring its operation after 2025 and a proposal for a technically feasible and economically optimum design which will meet all requirements concerning the repository's long-term safety including the implementation of currently available modern technologies and methods for ensuring its safe operation.

Basic information on the waste disposed of during 2015 is provided in the following table:

Richard repository in 2015:		
Volume of waste disposed of	m^3 / WP	95.5 / 442
Mass of the accepted waste	T	153
Number of waste containers accepted for disposal	Number	0

Overview of the utilisation of the volume and inventory limits of the Richard repository as at 31 December 2015



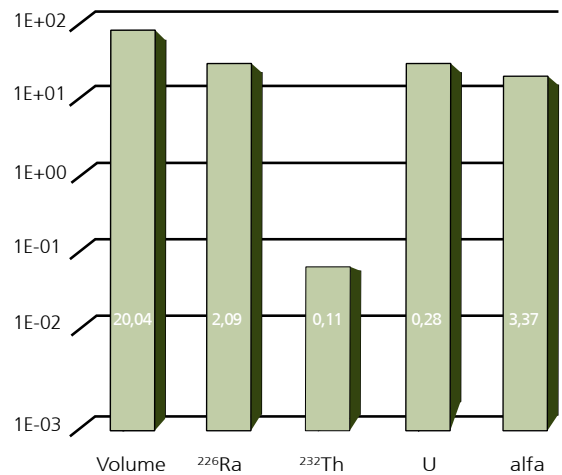
Utilisation (%), Richard repository

		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m^3]	10 249	7120	69.44	3131.82
^{3}H	[bq]	1.00E+15	3.42E+13	3.42	9.66E+14
^{14}C		1.00E+14	1.04E+13	10.40	8.96E+13
^{36}Cl		1.00E+12	9.05E+09	0.90	9.91E+11
^{90}Sr		1.00E+14	8.08E+12	8.08	9.19E+13
^{99}Tc		1.00E+11	4.34E+09	4.34	9.57E+10
^{129}I		2.00E+08	2.13E+07	10.63	1.79E+08
^{137}Cs		1.00E+15	3.44E+14	34.43	6.56E+14
alfa		2.00E+13	1.11E+12	5.55	1.89E+13
^{239}Pu		5.00E+12	3.78E+12	75.60	1.22E+12
^{241}Am		1.30E+13	1.03E+13	79.58	2.66E+12

Basic information on the waste disposed of during 2015 is provided in the following table:

Bratrství repository in 2015:		
Volume of waste disposed of	m^3 / WP	14.7 / 68
Mass of the accepted waste	T	24

Overview of the utilisation of the volume and inventory limits of the Bratrství repository as at 31 December 2015



Utilisation (%), Bratrství repository

		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m^3]	1 200	893	74.4	307
^{226}Ra	[bq]	5.00E+12	1.35E+12	2.70E+01	3.65E+12
^{232}Th		3.00E+12	1.85E+09	6.18E-02	3.00E+12
U		2.00E+12	5.83E+11	2.92E+01	1.42E+12
alfa		1.00E+13	1.97E+12	1.97E+01	8.03E+12

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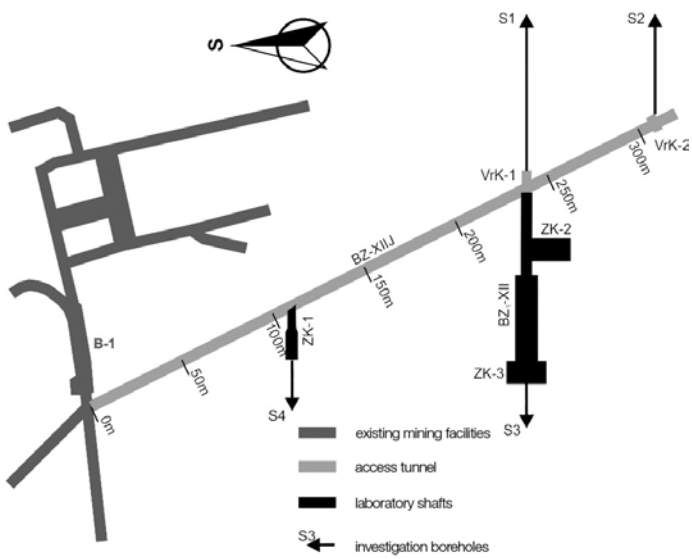
Underground laboratory



The concept of underground research laboratories plays a unique role in the research and development of the back-end of the nuclear fuel cycle. Underground research facilities provide data concerning the testing of the robustness of engineered barriers, data on the behaviour of the rock environment and, not least, the essential data required in order to demonstrate safety.

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LICENCING AND RADIATION PROTECTION

The main aim of activities related to the licensing procedure and radiation protection is to ensure repository operation and radioactive waste management compliance with the provisions of the Atomic Act and relevant Regulations, primarily SÚJB Regulation 307/2002 on radiation protection.

The licensing procedure for the Richard, Bratrství and Dukovany repositories is carried out every five years unless the SÚJB decides otherwise or unless no changes occur in repository operation or in the properties of waste disposed of which might have an impact on the fulfilment of radiation protection requirements. The basic documentation required for the licensing procedure is prepared in compliance with the Atomic Act. The safety report makes up the basic document which proves the safety of the repository in terms of the staff employed at the facility, the general public and the environment. The scope of the safety report is specified in methodological instructions issued by the SÚJB and based on recommendations from the International Atomic Energy Agency (IAEA) in Vienna. The radiation burden of staff members, the public and the environment is assessed using regularly verified procedures and as part of a number of international programmes. Computing tools and computer programs standardised by an SÚJB commission are used for safety analysis purposes.

"Repository safety is ensured if set limits and criteria for the safe operation of such facilities and/or the safe management of radioactive waste, based on the results of safety analysis and approved by the SÚJB, are observed. The observance of set limits and criteria for the safe operation of repositories means that requirements relating to the radiation protection of staff members, the public and the environment are fulfilled."

Radiation protection activities make up one element of the system for the protection of persons and the environment against the detrimental impact of ionising radiation the main reason behind which is to prevent the release of radionuclides into the environment and the occurrence of emergency situations. A specially-designed system made up of a range of technical and organisational measures is used for this purpose. The risk of danger to human life and health and the environment must be kept as low as possible with reasonable consideration for the economic and social aspects involved. The maximum acceptable level of risk corresponds to dose limits and other dose restrictions defined by SÚJB Regulation 307/2002 on radiation protection.

SÚRAO operates its repositories and performs the relevant support activities in compliance with SÚJB licences issued in accordance with the Atomic Act. Additional relevant documentation required for SÚRAO to operate its repositories has been approved. The licence for the Dukovany repository is effective until 15 December 2017, for the Richard repository until 31 December 2018 and for the Bratrství repository until 15 December 2018.

The fulfilment of requirements relating to radiation protection (as defined by Regulation 307/2002) has been verified during the monitoring of all the repositories including the now-closed Hostim repository. Individual dosimetry monitoring was provided for SÚRAO's employees, the health, expertise and skills of A and B category repository staff were verified and the inventory of individual doses received by SÚRAO´s staff members as well as SÚRAO-owned radiation sources updated during the year. No radiation protection breach occurred during the year. SÚRAO cooperated closely with outside contractors working at its repositories in terms of organising training courses and regular safety inspections as well as with concern to regular inspections of compliance with requirements concerning radiation protection at SÚRAO's facilities.

Concerning statutory requirements for radiation protection, SÚRAO co-operated closely with the SÚJB during their facility inspections and supervised the subsequent correction of any deficiencies identified relating to the observance of set limits, criteria for the safe operation of repositories, radioactive waste management and radiation protection. Requirements defined in SÚJB Regulation 318/2002 on the emergency preparedness of nuclear installations and facilities containing ionising radiation sources and on requirements concerning the content of the internal Emergency Plan were satisfied and appropriate measures aimed at correcting any deficiencies identified relating to emergency preparedness were implemented.

MAINTAINING AN INVENTORY OF ACCEPTED RADIOACTIVE WASTE AND NUCLEAR MATERIAL

SÚRAO is responsible (according to the Atomic Act, Article 26, paragraph 3d) for maintaining an inventory of accepted radioactive waste and its producers. Detailed rules for maintaining such an inventory are set out in Regulation 307/2002, on radiation protection. Records of accepted radioactive waste are maintained by SÚRAO both in paper and electronic form.

SÚRAO holds an SÚJB licence for the management of category II nuclear material. An inventory of nuclear material is maintained in compliance with SÚJB Regulation 213/2010, on maintaining an inventory and performing the inspection of nuclear materials and on the reporting of data required by the regulations of the European Communities. Nuclear materials are stored at the Richard repository at which the appropriate physical protection level is ensured as required by SÚJB Regulation 144/1997, on the physical protection of nuclear materials and nuclear installations and their categorisation. SÚRAO submits to the European Commission, on a monthly basis, reports on the amount of radioactive materials disposed of and copies of these reports are submitted to the SÚJB.

MINING SAFETY

The operation of the Bratrství and Richard underground repositories is authorised based on licences which allow "specific encroachment into the Earth's crust" issued in compliance with the Mining Act on mining operations. and certain other licences issued in compliance with the Mining Operations Act.

Both repositories were operated throughout the year in compliance with relevant legal regulations and licences issued by the Czech Mining Administration and the SÚJB as well as various internal operational regulations, limits and conditions.

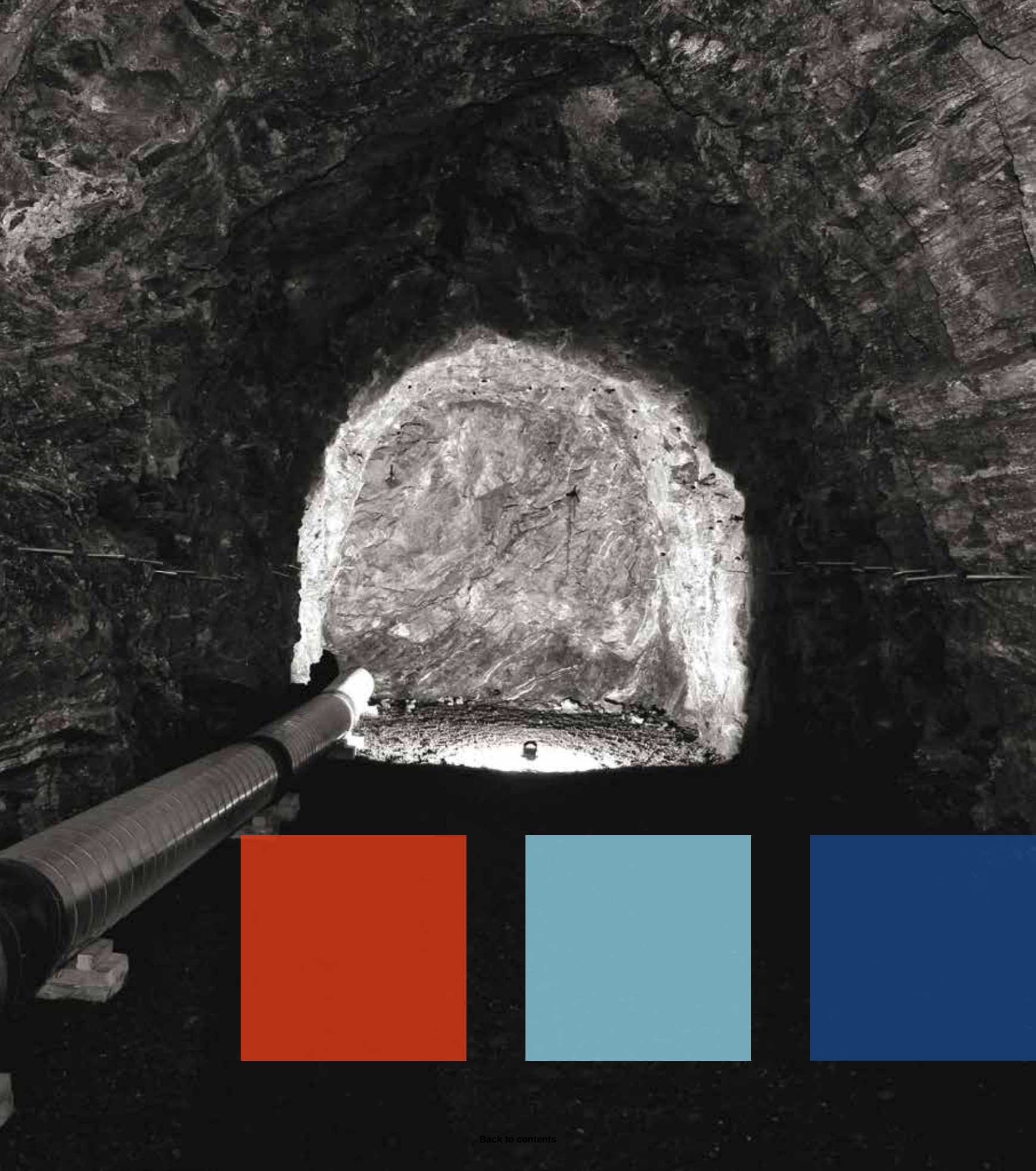
Specialised work concerning the final stabilisation of disposal chambers was carried out at the Richard repository during the year. A comprehensive inspection of all the machinery and technical equipment involved as required by mining legislation, in particular Regulation 22/1989 on Mining Health and Safety, was performed prior to project commencement. The technological process employed was prepared and approved by the mines manager, including content covering the risk assessment of work conducted by employees from a number of organisations in one workplace; those involved in the management and performance of the relevant activities were fully acquainted with the details thereof.

Emergency preparedness exercises relating to the coordination of occupational safety were held throughout the year at both the Richard and Bratrství repositories in accordance with the Emergency Plan issued by the mines manager and in conjunction with the Principal Mining First Aid Station in Most. The exercises proved that all the units involved were well prepared to solve any emergency situations which might arise.

Compliance with requirements for mining safety was verified during the year by the relevant Regional Mining Authorities in Most and Sokolov. Inspections performed at both repositories during the year showed that the operation of the underground facilities was in full compliance with mining legislation and all the relevant measures and decisions concerning the safe operation of both repositories were fulfilled.

Stages of the Bukov URL project

The project is divided into three stages. The construction stage (2013 – 2016) included the driving of an access shaft, the construction of the appropriate infrastructure and support facilities and the formation of specialist teams. The subsequent characterisation stage (2015 – 2016) consists of the detailed description of the Bukov URL environment. 3D models of the environment will be developed which will allow for the efficient planning of individual experiments. The experimental operation phase (2016 – 2025) makes up the final stage.



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DEVELOPMENT OF A DEEP GEOLOGICAL REPOSITORY FOR HIGH-LEVEL WASTE AND SPENT NUCLEAR FUEL

"The "Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic" stipulates that radioactive waste and spent nuclear fuel classed as waste which cannot be disposed of at existing repositories be finally disposed of in a deep geological repository."

The construction of such a repository in the Czech Republic is envisaged. The safety of the waste disposed of will be ensured by means of a system of both engineered and natural (geological) barriers which are able to isolate radionuclides contained in the waste from the environment until their concentration is reduced to a level which does not pose any risk to any component of the biosphere. Various potential options for the design of the repository are set out in the Reference Project for a Deep Geological Repository of 1999 and the updated version of 2011 available on SÚRAO's website (www.surao.cz).

SITE SELECTION

Potentially suitable sites for deep repository construction were selected by the Czech Geological Institute in 1992. Following a further assessment of deep repository candidate sites in terms of both excluding and prerequisite criteria set out in SÚJB Regulation 215/1997 and further relevant legislation (e.g. the Conservation of Nature and Landscape Act), 11 potentially suitable sites situated in three different rock types were identified from which SÚRAO subsequently selected 6 sites situated in stable granite formations. Following the completion of this phase of the selection process, geological research work commenced at the sites in the second half of 2003 with the aim of collecting more detailed geological data in order to reduce the surface area of each candidate site. Work carried out before 2004 was considered geological research (in terms of Act 62/1988, on Geological Work Practices). An evaluation of the work performed was completed in 2005.

However, in view of the overwhelmingly negative public attitude to the project, SÚRAO, following agreement with the Ministry of Industry and Trade, suspended all geological work at the sites until 2009 (the Government, by means of Decision No. 550 of 2 June 2004, accepted the suspension).

Consequently, sites were searched for with potentially more favourable public attitudes to the project. The investigation of former military areas was launched by SÚRAO at the end of 2008 in compliance with its plan of activities approved by the Government (Government Decision No. 1315 of 20 October 2008). The Boletice former military area was assessed in particular detail. In addition, an area close to a currently operational uranium mine at Dolní Rožínka (Kraví hora) was added to the list of candidate sites.

For the same reason, a competitive dialogue on the theme of the "assessment of geological and other information on selected parts of the Bohemian Moldanubian zone with respect to potential suitability for DGR siting" commenced in 2015. As a result of the competitive dialogue process two sites were selected based on preliminary geological information covering an area of 40km2 each, one in the vicinity of the Dukovany NPP and the other near the Temelín NPP. The objective of the work is to gather geoscientific and other information, to compile an evaluation regarding DGR siting, the assessment of potential conflicts of interest, the determination of proposals for investigation areas covering approximately 20 – 25km2 and the drafting of a preliminary study concerning DGR siting.

Any decision on repository siting at a certain locality will involve detailed geological investigation work which must be preceded by a decision on the identification of investigation areas. Consequently, in 2013 applications for the identification of investigation areas in the Březový potok, Čertovka, Čihadlo, Horka, Hrádek, Magdaléna and Kraví hora were submitted for the first investigation stage (site selection stage without technical operations), the aim of which was to reduce the number of candidate sites prior to the subsequent investigation stage (involving technical operations). Public discussions were held during 2014 at the respective regional departments and, based on the results, decisions were made on the identification of investigation areas. A number of participants in the procedure filed appeals against the decision of the Ministry of the Environment.

Based on the recommendations of the Appeals Commission, the Minister of the Environment issued a decision concerning the identification of investigation areas within all seven candidate sites in 2015. Geological investigation work on the sites commenced in the same year with the development of geological investigation projects and the assessment of available geoscientific information and data and will continue according to the following stages:

a) the site selection stage which will define the likely scope of suitable geological structures. Work will be aimed at reducing the number of potential sites;

b) the investigation stage which will seek to verify the geological data gathered on the various geological structures and underground areas in preparation for specific encroachment into the Earth's crust. Work will be aimed at the selection of two candidate sites;

c) the detailed investigation stage which will comprise a work package aimed at obtaining the geological data required for the assessment of the construction and operation of nuclear facilities. Work will be aimed at verifying the selection of the final site

A project concerning geological investigation work was prepared for the investigation stage in 2015 and, following discussions with the communities concerned, submitted to the Ministry of the Environment, thus launching the geological investigation stage. There were also presentations of the geological investigation survey to the general public in each selected site.

The specific information gained from the geological investigation work will form the basis for the subsequent development of synthetic geoscientific models, particularly those geological, hydrogeological, transport, geochemical and other descriptive models of the localities required for the conducting of safety analysis and feasibility studies. In addition, the investigation work will provide the data necessary for the fulfilment of individual site suitability criteria and data for the DGR design solution.

The decision-making process surrounding suitability for the siting of a deep repository will take into account the potential impacts of the repository on the environment and will include a detailed socio-economic analysis of the impact of repository construction and operation on community development plans and the standard of living of local people.

SÚRAO worked intensively during 2015 on refining the requirements, conditions and criteria involved in the eventual construction of the deep geological repository, the results of which were submitted to the Ministry of Industry and Trade, the Ministry of the Environment and the SÚJB and discussed by the Working Group for Dialogue on the Deep Geological Repository. In addition, the methodology for the application of these indicators and criteria concerning the selection of a site suitable for deep repository construction was refined.

An overview of localities potentially suitable for deep repository siting for which investigation areas have been approved (and concerning which decisions have come into force), the municipalities concerned and the amount of statutory financial contributions (as at 31 December 2015):

Locality	Region	Municipality	Investigation area, km²	Annual contribution
Čertovka	Ústecký	Blatno	13.424151	CZK 4,000,000
	Ústecký	Lubenec	9.499686	CZK 3,449,906
	Plzeňský	Tis u Blatna	4.787860	CZK 2,036,358
	Plzeňský	Žihle	1.359414	CZK 1,007,824
		Total	**29.071111**	**CZK 10,494,088**
Magdaléna	Jihočeský	Jistebnice	17.437767	CZK 4,000,000
	Jihočeský	Nadějkov	4.785981	CZK 2,035,794
	Jihočeský	Božetice	1.349120	CZK 1,004,736
		Total	**23.572868**	**CZK 7,040,530**
Horka	Vysočina	Hodov	9.600379	CZK 3,480,114
	Vysočina	Rohy	5.371884	CZK 2,211,565
	Vysočina	Oslavička	3.414927	CZK 1,624,478
	Vysočina	Budišov	2.928363	CZK 1,478,509
	Vysočina	Nárameč	2.254690	CZK 1,276,407
	Vysočina	Vlčatín	1.865850	CZK 1,159,755
	Vysočina	Osové	1.034598	CZK 910,379
	Vysočina	Rudíkov	0.990977	CZK 897,293
	Vysočina	Oslavice	0.798283	CZK 839,485
		Total	**28,.259951**	**CZK 13 877,985**
Čihadlo	Jihočeský	Lodhéřov	14.878511	CZK 4,000,000
	Jihočeský	Deštná	5.213349	CZK 2,164,005
	Jihočeský	Světce	3.642110	CZK 1,692,633
	Jihočeský	Pluhův Žďár	2.356508	CZK 1,306,952
		Total	**26.090478**	**CZK 9,163,590**

Locality	Region	Municipality	Investigation area, km²	Annual contribution
Březový potok	Plzeňský	Chanovice	6.579339	CZK 2,573,802
	Plzeňský	Velký Bor	8.562038	CZK 3,168,611
	Plzeňský	Pačejov	2.924166	CZK 1,477,250
	Plzeňský	Maňovice	2.829812	CZK 1,448,944
	Plzeňský	Olšany	1.353224	CZK 1,005,967
	Plzeňský	Kvášňovice	0.864983	CZK 859,495
		Total	**23.113562**	**CZK 10,534 069**
Hrádek	Vysočina	Rohozná	7.184791	CZK 2,755,437
	Vysočina	Nový Rychnov	6.074868	CZK 2,422,460
	Vysočina	Milíčov	2.968314	CZK 1,490,494
	Vysočina	Hojkov	4.308423	CZK 1,892,527
	Vysočina	Cejle	2.020374	CZK 1,206,112
	Vysočina	Dolní Cerekev	1.755480	CZK 1,126,644
		Total	**24.312250**	**CZK 10,893,675**
Kraví hora	Vysočina	Střítež	5.775041	CZK 2,332,512
	Jihomoravský	Drahonín	3.474158	CZK 1,642,247
	Vysočina	Moravecké Pavlovice	3.427197	CZK 1,628,159
	Vysočina	Bukov	1.830774	CZK 1,149,232
	Vysočina	Věžná	2.168012	CZK 1,250,404
	Vysočina	Sejřek	0.330972	CZK 699,292
	Vysočina	Milasín	0.069181	CZK 620,754
	Jihomoravský	Olší	0.033889	CZK 610,167
		Total	**17.109224**	**CZK 9,932,767**

DESIGN ACTIVITIES

The technical design of the repository including an estimate of the costs involved in construction and operation is contained in the Reference Project for a Deep Geological Repository (DGR) and the updated version thereof according to which the waste disposal container forms one of the engineered barriers. In this context work commenced in 2013 on a project concerning the materials to be used for, and the structural design of, a waste disposal container for spent nuclear fuel; crucially, the container must meet all the relevant criteria in terms of required lifetime and safety. In 2014 the first stage of the project was completed the aim of which was to draw up a list of materials to be used in the construction of waste disposal containers, prepare an experimental programme aimed at the verification of container lifetime and test the modelling tools to be used in the final structural design. The project continues with the experimental testing of the selected construction materials. The following stage the aim of which will be to determine a draft design of a waste disposal container, a proposal concerning handling techniques, and the assessment of the experimental programme, will be completed in 2016.

The "Mock-up Josef" project, concerned with the verification of engineered barriers, has been underway since 2010 at the Josef Underground Research Facility near Chotilsko in the Příbram region. The aim of the project is to research in detail the properties and behaviour of bentonite barriers in deep repositories. The project involved the construction of a realistic model of a supercontainer which was emplaced in a disposal well sunk in part of the Josef underground facility at the end of 2012; data collection commenced in January 2013. The project continued in 2015 with the continuous assessment of the data collected.

A tender for a contractor for the implementation of a project entitled "Research Support for the Design of the Deep Repository" was launched in 2015. However, the tendering procedure had not been concluded by the end of 2015 due to appeals submitted by unsuccessful applicants. The objective of the project consists of the optimisation of the design of selected important technological systems within the deep repository in terms of technical feasibility, operational security and economic considerations. The project also involves the assessment of the environmental characteristics of, and the impact of the construction and operation of the repository on, candidate sites. A feasibility study will be conducted for each site with the aim of eventually reducing the total number of sites.

The sequence of steps involved in the process of the gradual reduction in the number of sites and the selection of the final site is shown in the table below:

Stage	Activity	Result	Period
Reduction in the number of sites	» Near-surface geological research and investigation » Definition of lithologically homogenous rock » Description of the fracture system » Definition of hydrogeologically conductive structures » Updating of the preliminary feasibility study » Safety analyses (safety case) – using generic and specific data from the sites concerned » Changes in public opinion at the localities concerned based on public opinion surveys and a comparison with survey data gathered in 2008 and 2011 – both at the local and regional scales » Generic study of DGR impact on the environment	4 sites	2015–2017
Selection of candidate sites	» In-depth investigation of the sites (drilling investigation, stage I) » Preliminary characterisation of rock mass properties at the depth of the proposed repository » Localised feasibility study » Preliminary safety report (for each site) » Study of DGR impact on the environment - localised » Position of local communities	2 candidate sites	2018–2020
Selection of the main and reserve sites	» Detailed geological investigation (drilling investigation, stage II, detailed geophysics) » Detailed characterisation of the rock mass at the depth of the proposed repository » DGR project at the site (for both sites) » Study of DGR impact on the environment – in compliance with the EIA process » Assignment safety report (for both sites) » Position of local communities	1 final site 1 reserve site	2020–2025

ACTIVITIES CONCERNING THE ASSESSMENT OF DGR SAFETY

The "Research Support for DGR Safety Assessment" project was prepared in compliance with the "Medium-term Research and Development Plan for Deep Repository Siting". The main objective of the project, launched in 2014, is to interpret primary data, gather information, and formulate models and further arguments for the preparation of a number of safety analyses to be used in the assessment of the long--term safety of repository siting at all the potential sites. The main part of the project consists of the development of 3D structural-geological, hydrogeological and transport models for all the selected sites which will form the basis for the safety assessment of repository construction at those sites. Information obtained from the models will enhance geological investigation work at the sites concerned and assist in determining the positioning of deep boreholes which will be drilled in the advanced stages of geological investigation. The project also provides the information required for the refinement of data on the properties of spent nuclear fuel and radioactive waste, on the long-term stability of engineered barriers and the migration parameters of the rock environment. A total of 22 research reports were elaborated during 2014 and 2015 in compliance with subproject proposals.

GENERIC RESEARCH FOR DGR DEVELOPMENT

A generic research programme the objective of which is to gather data, arguments and input documentation for the assessment of the feasibility of deep repository construction at candidate sites as well as proof of overall DGR feasibility is under way at SÚRAO´s underground facilities and via participation in other relevant projects (e.g. at the Grimsel Test Site in Switzerland).

The Josef Underground Research Facility, situated approximately 50km south of Prague, is one such facility operating in the Czech Republic. Situated in an abandoned mine, the Faculty of Civil Engineering of the Czech Technical University in Prague opened this underground laboratory, the maximum depth of which is 150 metres, in 2007. The northern part of the facility known as "Mokrsko-Západ", consists of granitoid rocks. SÚRAO uses this facility primarily for demonstration experiments aimed at proving engineered barrier behaviour (e.g. the DOPAS and Mock-Up experiments).

A second facility, the Bedřichov tunnel situated in the Jizerské mountains and consisting of a water supply conduit is also employed for generic research purposes. The tunnel, bored through granite of the Krkonoše-Jizera pluton, is 2600 metres long and is located at a depth of up to 150 metres below the surface. Research conducted at the facility primarily concerns special hydrogeological study methodologies and related numerical modelling.

The most important underground facility, however, in terms of research on the future development of the Czech DGR, consists of the Bukov Underground Research Laboratory (URL) situated in the south part of the Rožná uranium mine (but outside the operational area) in the east of the Czech Republic. The underground part of the Bukov URL, which is currently nearing completion, is situated at a depth of 600 metres beneath the surface in an amphibole-biotite migmatite rock environment.

Bukov URL construction was launched in 2013 and will be completed in 2016. Work included the driving of an access shaft, the building of the appropriate infrastructure and the preparation of support facilities for specialist scientific teams. Due to being able to utilise the existing underground infrastructure of the Rožná complex in the vicinity of the Bukov B-1 mine working, considerable financial savings were made in not having to excavate the underground laboratory from the earth's surface. According to expert estimates (based on experience gained in other countries), the costs incurred on the Bukov URL to date are as much as 100 times lower than the costs of a similar facility constructed from the surface.

In parallel with construction, the characterisation stage is under way the objective of which is to construct 3D geoscientific models of the environment which will allow for the efficient planning of future experimental work and, at the same time, provide the initial generic information required for DGR safety analysis concerning the seven assessed localities. The planned experiments will form the basis for the assessment of the rock mass environment and the processes which are expected to take place within the future deep repository with concern to technical feasibility, safety assessment and monitoring during the construction and operation phases. In addition, it is planned

that the experiments will broaden existing knowledge of the behaviour of the rock environment with respect to geotechnical engineering requirements, DGR design and risk management. The Bukov URL will also be used for the verification of methodologies and technological procedures relevant to the construction, installation and long-term behaviour of the DGR's engineered barrier system.

The proposed experimental programme (Strategic Plan for the Research and Development of the Bukov Underground Generic Laboratory 2016 – 2025) is fully in compliance with the prepared "Medium-term Research and Development Plan for Deep Repository Siting in the Czech Republic for 2015-2025". The Bukov generic laboratory will allow for the optimum planning of the experimental programme to be implemented at the final DGR site which, due to the data already collected, will aim at gathering specific and characterising data without the need to repeat the whole research programme. The Bukov URL presents the only field testing site with no outstanding conflicts of interest in the Czech Republic at which SÚRAO can collect currently unavailable real data from the Bohemian Massif at depths envisaged for the construction of the future repository.

INTERNATIONAL PROJECTS

International cooperation is of particular importance in terms of research and development concerned with deep repositories, and a number of countries (e.g. Sweden, Finland, France and Switzerland) are well advanced in this respect. SÚRAO takes every opportunity to link up with those organisations which can offer both experience and know-how. SÚRAO has signed a Memorandum of Understanding with the Finnish organisation Posiva Oy whose experience and knowledge relating to DGR site selection and safety will provide SÚRAO with invaluable support.

"Joint research activities at the bilateral and international levels and the use of common resources and knowledge, principally linked with European research and development framework programmes, provide results much more quickly than single-country research programmes."

Participation in the IGD-TP platform (Implementing Geological Disposal of Radioactive Waste Technology Platform) which has identified strategic priority research and development topics for the forthcoming time period which will include the implementation of the EU's first deep repositories planned for 2025 (Sweden, Finland and France) has proven particularly important in this respect. DOPAS, an IGD-TP technology platform project which is being conducted by a consortium made up of ANDRA/Nagra, Posiva, SKB, SÚRAO/ČVUT/ÚJV, NDA and GRS/DBE and coordinated by Posiva, is of primary importance. The project involves the design and construction of deep repository sealing plugs in situ and the study of a wide range of processes which will occur within the engineered barriers following SNF disposal, and will provide the data required for the assessment and verification of repository safety as well as demonstrate the feasibility of the use of sealing materials available in the Czech Republic (Rokle-type bentonites). Experiments are being performed by Czech partners in the DOPAS project at the Josef underground complex and ÚJV Řež laboratories. The construction of the first sealing plug in a specially-selected part of the Josef underground complex commenced in 2014. Work is also being performed concurrently by ÚJV Řež and ČVUT/CEG. It is planned that the project will reach completion in 2016.

The CAST project which is concerned with the behaviour of carbon-14, one of a group of critical radionuclides, under repository conditions is supported by the European Commission.

SÚRAO specialists continue to be involved in the PETRUS III project concerned with the education of young specialists in the field of radioactive waste disposal.

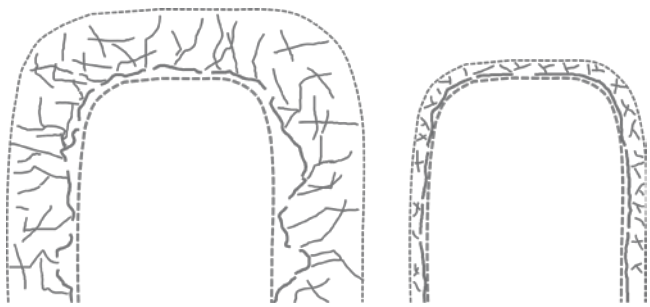
In addition, Czech specialists are involved in projects organised by the IAEA and the OECD/NEA with the participation of non-EU countries including the USA, Canada, Japan, South Korea, China and Switzerland. Very valuable results are obtained e.g. from joint experiments conducted at foreign underground laboratories (e.g. the Grimsel laboratory in Switzerland) the main objectives of which are to gain an understanding of the processes at work in deep radioactive waste repositories situated in crystalline rocks and to gather data for safety analysis purposes. The LTD – Long Term Diffusion – experiment, concerned with the retardation of the transport of radionuclides via rock fractures into the crystalline rock matrix, is a globally unique experiment involving the study of radionuclide behaviour in the natural environment. A further two projects are currently underway involving SÚRAO´s participation one of which is concerned with the long-term monitoring of structural-tectonic changes in a crystalline rock massif over a set time period and the potential impact on the long-term stability of the massif (the LASMO – Large Scale Monitoring – experiment). The second experiment involves the long-term assessment of the speed of, and mechanisms surrounding, the corrosion of materials under real rock mass conditions (the MaCoTe – Material Corrosion Test – experiment). Materials suggested by the "Research and Development of a Waste Container" programme are used in the experiment. The aim of SÚRAO's involvement in these experiments is to gain the knowledge and experience required for the performance of similar experiments in the Czech Republic. Preparations for the Homobento EU project concerned with the creation of a high-quality bentonite mixture is currently under way.

During the year, in cooperation with NAGRA, SÚRAO launched preparations for a project entitled the "Use of Experience of the Swiss Grimsel Underground Laboratory (Grimsel Test Site – GTS)" in experiments to be conducted at the Bukov URL. NAGRA, the national agency responsible for radioactive waste management in Switzerland as the operator of the GTS, is the main coordinator and implementer of all the various experiments conducted at the facility. Thus, it is anticipated that SÚRAO will benefit significantly via the transference of practical and long-term experience concerning the preparation of research activities, experiment realisation and underground laboratory operation.

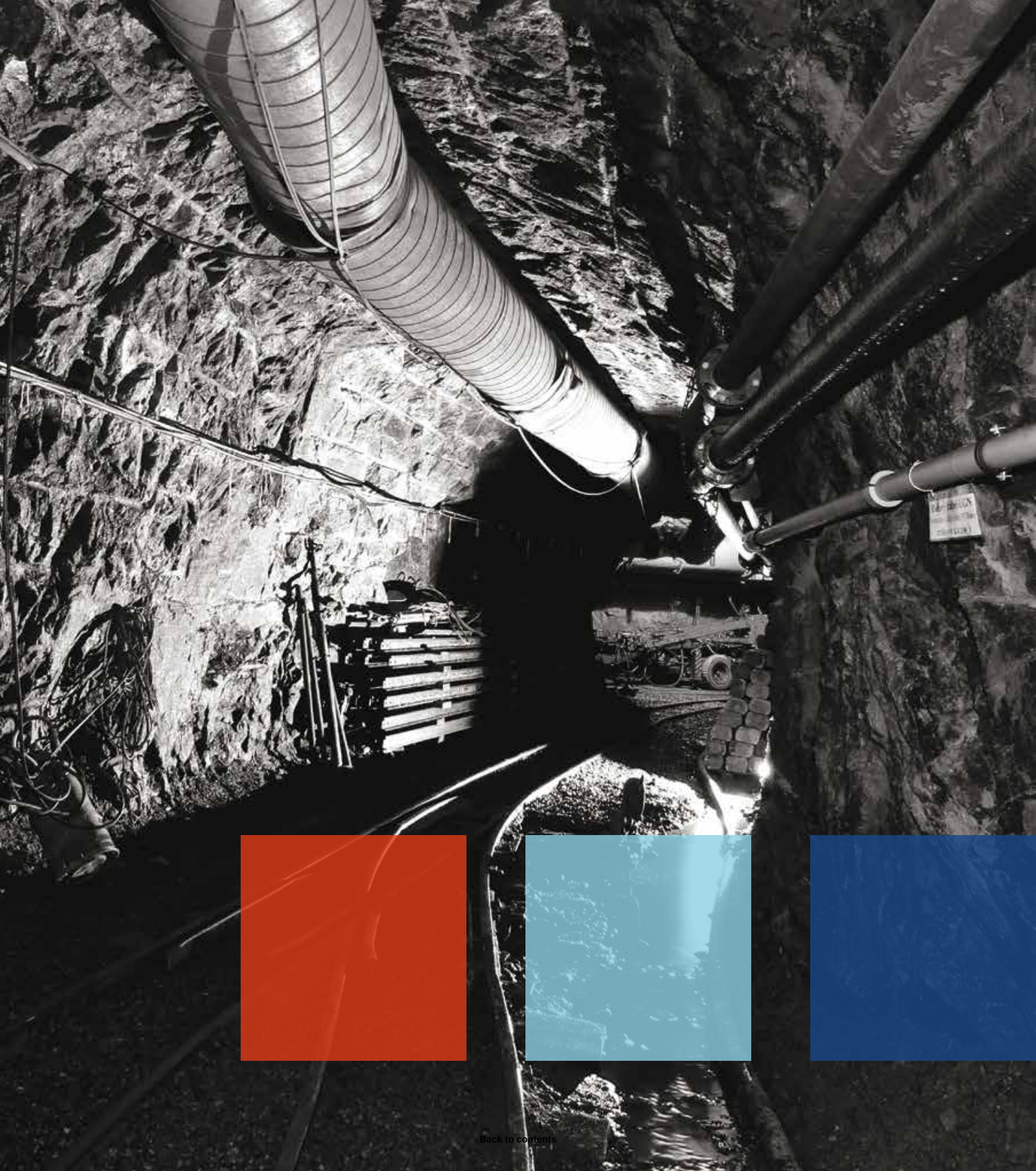
The EBS Task force – stage II joint international research project continues with the involvement of the Technical University (TU) in Liberec and ÚJV Řež. The project is focused on modelling and experimentation concerned with the long-term stability of bentonites in the buffer layer. The project is being coordinated by the Swedish SKB organisation.

The Decovalex D2015 international project was concluded during the year. The international project team included specialists from the TU in Liberec and the Institute of Geonics of the Czech Academy of Sciences in Ostrava. The objective of the project was to validate the robustness of development tools used in the modelling of near-field processes and rock fracture zones, and to develop tools for the modelling of related processes which are expected to occur in deep repositories. Negotiations on the further continuation of this prestigious project are currently under way.

Configuration



The underground laboratory consists of a system of crosscuts and research chambers with a total length of 470 metres. The various parts of the facility are located in a range of geological conditions and have been constructed using differing technologies in order that the planned experimental work might prove deep repository safety. SÚRAO employed the so-called smooth excavation method for the construction of the various parts of the laboratory thus allowing for the minimum disruption of the rock massif.



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INTERNATIONAL COOPERATION

SÚRAO, as similar organisations in other countries which are committed to tackling radioactive waste issues in a responsible manner, is involved in the activities of a number of international organisations. Mutual cooperation, consisting of the exchange of information and direct participation in both practical scientific experiments and the activities of a number of international institutions, forms an integral part of what SÚRAO considers a serious approach to issues surrounding radioactive waste and the nuclear programme in general.

The European Commission, the IAEA (International Atomic Energy Agency) and OECD/NEA (Nuclear Energy Agency of the Organisation for Economic Co-operation and Development) represent the main sources of information, instigate legislative and regulatory change and coordinate the majority of events concerned with the field of radioactive waste management internationally. The Czech Republic is a signatory to the IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. SÚRAO, together with the SÚJB, is responsible for the fulfilment of requirements deriving from the Convention.

SÚRAO, in cooperation with the IAEA, is a full member of DISPONET, a network of operators of low-level and intermediate-level waste repositories. Radioactive waste management issues are also handled by the OECD/NEA, specifically by the RWMC, its Radioactive Waste Management Committee. This committee is organised in the form of internal and external working groups. SÚRAO specialists represent the Czech Republic in the IGSC (the Integration Group for Safety Case) and the FSC (Forum on Stakeholder Confidence) working groups.

SÚRAO is active in a number of research and development projects financed by the European Commission both as a mediator and provider of support for the participation of Czech firms and research institutions in such projects. Participation in the IGD-TP platform which has identified strategic priority research and development topics for the forthcoming time period which will include the implementation of the EU's first deep repositories planned for 2025 (Sweden, Finland and France) is particularly important in this respect. SÚRAO enjoys direct and active representation in the IGD-TP Executive Group.

Since 1998 SÚRAO has been involved in the activities of the so-called Club of Agencies which, under the patronage of the European Commission, makes up a voluntary platform for the informal exchange of information concerning radioactive waste management.

The most significant area of cooperation at the international level consists of the development and verification of methods for the assessment of repository safety and the demonstration of deep geological repository feasibility. Thus SÚRAO experts are able to take advantage of proven, technically reliable and widely-recognised methods and tools for the long-term forecasting of repository system behaviour.

Bilateral cooperation with partner organisations in other countries is very beneficial for SÚRAO, particularly participation in specific subprojects conducted at partner research facilities. SÚRAO has signed a number of international framework agreements e.g. with Nagra (Switzerland) and Posiva (Finland) and also cooperates on a number of subprojects with SKB (Sweden).

In 2015 SÚRAO signed a Memorandum of Understanding with the Finnish organisation Posiva Oy whose experience and knowledge relating to DGR site selection and safety will provide SÚRAO with invaluable support. In addition, Czech specialists are involved in projects organised by the IAEA and the OECD/NEA with the participation of non-EU countries including the USA, Canada, Japan, South Korea, China and Switzerland.

PUBLIC RELATIONS

Direct communication with the public in areas potentially eligible for the construction of a deep geological repository continued to be SÚRAO's priority in terms of public relations in 2015. Communication during the year focused on providing information relating to applications for the identification of investigation areas in all seven candidate sites. SÚRAO is committed to communicating with the municipalities concerned in an open and transparent manner. The identification of investigation areas constitutes the first stage of the geological investigation process.

In the second half of 2015 the Ministry of the Environment approved applications for the identification of investigation areas at all seven sites. A number of participants in the procedure subsequently filed appeals against the decision which are currently being processed by the relevant courts. Based on amended Government Decree No. 416/2002, Article 4, paragraph 4 approved by the Government with effect from 20 December 2015, the procedure for the provision of financial contributions paid by SÚRAO to local communities in whose areas investigation areas have been identified was refined; SÚRAO paid the statutory contributions to all 40 municipalities concerned at the end of 2015.

Comprehensive geological-investigation projects were sent to all the local authorities concerned so as to ensure that they and local residents had accurate information at their disposal. The planned investigation work was also presented in an interactive form at all the localities. The opportunity to meet with experts in specific geological methods was welcomed by many local people. In addition to discussions with experts on individual methods to be employed at the sites, visitors were able to study at first hand geological equipment and rock samples collected from the sites. The meetings were attended by both those in favour of and against the deep repository project.

With the aim of improving awareness of radioactive waste management issues, SÚRAO organised technical excursions to the Richard repository, to the Josef underground research facility and the Dukovany and Temelín nuclear power stations during the year. More than 300 inhabitants from DGR candidate sites participated in the excursions which were aimed at enhancing personal experience of nuclear issues.

The Richard Civic Control Commission (Richard CCC) was established in 2015 with the main objective of improving awareness of the Richard repository for those living in its immediate surroundings. Membership of the Commission comprises representatives of nearby communities and the host region (three representatives of the town of Litoměřice, one representative of the Žalhostice community, one representative of the Miřejovice community and two representatives of the Ústí-nad-Labem region). SÚRAO counts the provision of information on repository operation and transparent communication with local inhabitants and representatives of surrounding communities as one of its top priorities.

The 2015 annual excursion provided members of the Working Group for Dialogue (of the various communities which make up DGR candidate sites, the public and non-profit organisations) with the opportunity to visit the French underground laboratory at Bure which has been confirmed as the final site for the future French deep geological repository. Following a number of technical visits, excursion participants discussed a range of issues with their French counterparts from local communities, non-profit organisations and other interested parties concerning their experience with laboratory siting and primarily their roles in the deep repository development process.

In September, SÚRAO, in cooperation with the ANDRA agency (the French equivalent of SÚRAO), organised a workshop concerning public involvement and opportunities associated with wider regional development relating to future repository site selection. Participants were appraised of developments in the preparation of the French repository and with changes to legislation which led to the successful selection of the final site.

SÚRAO organises technical excursions and lectures for schools which are aimed at explaining how for example radioactivity occurs, what types of radiation we are aware of and what an isotope half-life is. In this context SÚRAO has developed an educational programme for elementary and secondary schools and universities; the presentation provides plenty of detailed information and is accompanied by a number of practical examples. In 2016 SÚRAO plans to further improve its educational programme.

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Information in the form of professional presentations of SÚRAO's full range of activities (of all types of radioactive waste, its generation, treatment and disposal as well as of currently operational and closed repositories, the deep geological repository project and radioactivity in general) is available at its main information centre at Dlážděná 6, Prague 1 where SÚRAO's head office is located, and at the Richard repository information centre near Litoměřice. In addition to these information centres, SÚRAO has information stands in Lubenec and Rohozná, at municipal offices in Dukovany and Rouchovany, and at its information "corner" in Dolná Cerekev. A total of 1,200 students from Prague and the surrounding area visited the main information centre in Prague in 2015. In addition, SÚRAO provided presentations at schools upon request.

SÚRAO continued the publication and distribution of its "News from SÚRAO" quarterly newsletter to individual households at all the deep repository candidate localities during 2015. As far as those living in the Čertovka locality are concerned, particularly in the towns of Lubenec, Blatno and Žihle, SÚRAO also regularly publishes information on its activities in local newspapers.

SÚRAO has a statutory obligation to provide information according to Act 106/1999 on free access to information. Five applications for information under the Act were received during 2015.

Provision of information to the public during 2015 according to Act 106/1999 on free access to information

Number of applications for information under the Act	5
Number of appeals against a ruling	0
Conclusions of proceedings on sanctions for infringement of the Act	0
Other information concerning the implementation of Act 106/1999	-

Provision of information to the public according to Act 123/1998 on free access to information on the environment

Number of applications for information under the Act	0
Number of appeals against a ruling	0
Conclusions of proceedings on sanctions for infringement of the Act	0
Other information concerning the implementation of Act 123/1998	-

GENERAL PUBLIC INVOLVEMENT – ACTIVITIES OF THE WORKING GROUP FOR DIALOGUE ON THE DEEP REPOSITORY

Transparency makes up a basic value which must be respected in all areas of management, both at the national and international levels and, as far as radioactive waste management is concerned, transparency is considered to be crucial. The "Working Group for Dialogue on the Deep Repository" (the Dialogue WG) which was established in 2010, supported by the Ministries of Industry and Trade and the Environment, forms a platform for enhancing the transparency of the process of the identification of a locality for deep repository construction by means of the involvement of representatives of the various communities concerned, environmental organisations, the state, Parliament, academic institutions etc. The Dialogue WG is concerned with improving the transparency of the decision-making process regarding deep repository siting whilst fully respecting the interests of the general public and with strengthening the active involvement of the public and, specifically, the communities involved in the process. SÚRAO has a representative in the Dialogue WG and takes an active part in the activities of the secretariat and the preparation of documentation on issues to be discussed at the group's meetings.

> **"The main priority of the Dialogue WG is to strengthen the role of the communities concerned through legislative means in connection with which the group prepared a proposal for draft legislation relating to the involvement of such communities in the decision-making process regarding deep repository siting."**

The procedural status of the Dialogue WG constituted a major issue in 2015. At the beginning of 2015 the WG was incorporated into the Government Council for Raw Materials and Energy Strategy on which specialists from the Ministries of Industry and Trade and the Environment, the Union of Towns and Municipalities of the Czech Republic and the Association of Regions in the Czech Republic are represented. The new status of the Dialogue WG should also include the provision of systematic support from the Government and certain Ministries and a clear definition of the relationship between the individual players involved in the process. A further important achievement of the Dialogue WG in 2015 concerned the preparation and approval of draft legislation relating to the involvement of communities in the process of the siting of the deep repository for high-level waste. This draft legislation was included in the Government legislation plan for 2016.

Characterisation

In this stage multidisciplinary data is obtained which can be collected only from the construction of mining facilities. The main output consists of a set of data to be employed for the construction of 3D models (e.g. geological, structural-geological and hydrogeological) of the locality.

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MANAGERIAL, TECHNICAL AND ADMINISTRATIVE MATTERS

In addition to those outlined above, SÚRAO is involved in a whole range of additional activities either in connection with its main area of business or as required by relevant legislation.

ADMINISTRATION OF NUCLEAR ACCOUNT FUNDS

The administration of Nuclear Account funds was governed in 2015 by the Atomic Act, Article 27, Government Decree 416/2002 on the scale of charges and manner of payment by radioactive waste producers to the Nuclear Account and on annual contributions to local communities, and Act 280/2009 (the Tax Code). Detailed records were kept on individual contributors to the Nuclear Account (in compliance with Government Decree 416/2002, Article 3).

PAYMENTS BY PRODUCERS OF RADIOACTIVE WASTE FROM NUCLEAR REACTORS

Pursuant to Government Decree 416/2002, Article 1, ČEZ contributed in 2015 CZK 1,342,014,000 while the yearly contribution made by the Research Centre Řež amounted to CZK 684,400. Both amounts were paid in regular monthly instalments which were made directly to the Nuclear Account.

PAYMENTS BY OTHER PRODUCERS OF RADIOACTIVE WASTE

Other waste producers, as specified in Article 2 of Government Decree 416/2002, paid their charges following acceptance of their waste for disposal by SÚRAO. Payment notices were issued to each waste producer (based on a contract between SÚRAO and the respective waste producer) upon acceptance of the radioactive waste accompanied by the relevant waste acceptance documentation. The total sum paid in 2015 amounted to CZK 18,510,200.

Disposable funds in the Nuclear Account were invested by the Ministry of Finance in the financial market (in compliance with the Atomic Act, Article 27). Revenue received from financial investment totalled CZK 607,9 million. Assets on the Nuclear Account as at 31 December 2015 amounted to CZK 24.4 billion.

AUDITING LICENSEES' DECOMMISSIONING RESERVES

SÚRAO is responsible (according to the Atomic Act, Article 26, paragraph 3h) for ensuring, by means of an audit, that relevant licence holders honour their obligation (Atomic Act, Article 18, paragraph 1h) to create financial reserves for the future decommissioning of their facilities.

Audits were conducted in 2015 at 13 organisations comprising a total of 32 facilities which were found to meet the following conditions:

- he organisation concerned is obliged to accumulate decommissioning reserves in compliance with the amended Atomic Act (Act 13/2002);
- the organisation is in possession of a certificate verifying its decommissioning cost estimate;
- the verified decommissioning cost estimate exceeds CZK 300,000.

Audits aimed at verifying the accumulation of financial reserves were conducted under the same rules as in the previous year. Audits were performed in cooperation with the respective licence holders and requests by SÚRAO for supplementary documentation were duly met.

Records of audits performed of individual licence holders were drawn up containing audit results, the amount of accounting reserves and the amount of funds deposited in dedicated escrow bank accounts including a review of the development of the accumulation of financial reserves.

INTERNAL CONTROL SYSTEM

SÚRAO's internal control system was adopted in compliance with Act 320/2001, on financial control in the public administration sector, and implementing Regulation 416/2004. The structure of the internal control system respects SÚRAO's specific activities, its organisational structure in relation to activities performed and the approved number of work positions.

In order to further develop the internal control system, SÚRAO has introduced Internal Control System Directive S.28 which defines basic control audit procedures. The management system is defined in the basic management directives; the most important document consists of the Handbook on SÚRAO's Quality Assurance System and the defined map of processes which forms an Appendix to the Handbook. Basic related management directives consist of the Standing Orders, Staff Regulations, Decisions of the Managing Director and Authorising Documentation, in compliance with the Financial Control Act. These documents set out the responsibilities of individual departments, the competences and responsibilities of the management and executive officers, as well as the main audit principles and methods to be adopted by SÚRAO's management. Economic management is defined in the following documents: Preparation of the Yearly Plan and Budget, Contract Management, Asset Management, Budgetary Management, Circulation of Accounting Documents and Accounting Processing.

The Security Policy regulation and rules for the maintaining of documentation set out in the Documentation Rules including the so-called shredding plan form integral parts of the management system.

Other management directives define the requirements for the implementation of the basic processes in radioactive waste management and repository operation in terms of nuclear safety, radiation protection, physical protection, emergency preparedness, quality assurance and environmental protection and their fulfilment by SÚRAO. These requirements are based on the provisions of the Atomic Act and implementing Regulations as well as SÚJB Regulations. In addition, SÚRAO adheres to generally binding regulations applicable to the public administration sector as well as Act 218/2000 on Budgeting Rules, Act 219/2000 on the Property of the Czech Republic and Act 137/2006 on Public Contracts. SÚRAO operates its quality assurance system according to, and employs the methods and procedures set out in, the EN ISO 9001/2008 standard, as amended.

Internal audits are managed and performed, as stipulated in Articles 28 and 29 of Act 320/2001, by the internal auditor who is directly responsible to the Authority's Managing Director. Internal audits performed in 2015 were based on the annual plan for internal audits. Internal auditing was performed in compliance with the Internal Audit Quality Assurance Programme and concerned determining solutions to current issues arising in the course of SÚRAO´s activities, consultation relating to internal processes, commenting on relevant documentation and reviewing particular areas of the Authority's activities.

QUALITY ASSURANCE AND CONTROL

SÚRAO has implemented and constantly updates a documented Quality Management System complying with the EN ISO 9001/2008 standard. The system is concerned with activities as set out by the Atomic Act, Article 26 (Act 18/1997) for which SÚRAO holds a licence. Quality assurance requirements apply to those processes which relate to research and development in the field of radioactive waste management, the construction and closure of repositories and SÚRAO´s obligations towards radioactive waste producers, state authorities and the public. The Quality Management System is also concerned with certain support processes relating to the operation of the Authority. The main objectives of the Quality Management System are to ensure both efficiency and compliance with established work processes with respect to all aspects of SÚRAO's activities.

> **In 2015 quality management was merged with occupational health and safety protection and fire safety with the aim of creating an integrated management system in the future in compliance with ČSN OHSAS 18001 standard.**

52 internal management documents were updated in 2015 due to changes and modifications to processes, legislation and organisational structure.

The plan of quality audits for 2015 included two audits at RW producers, one audit at the test laboratory and one audit of internal processes. No discrepancies or serious deficiencies were detected during the audits.

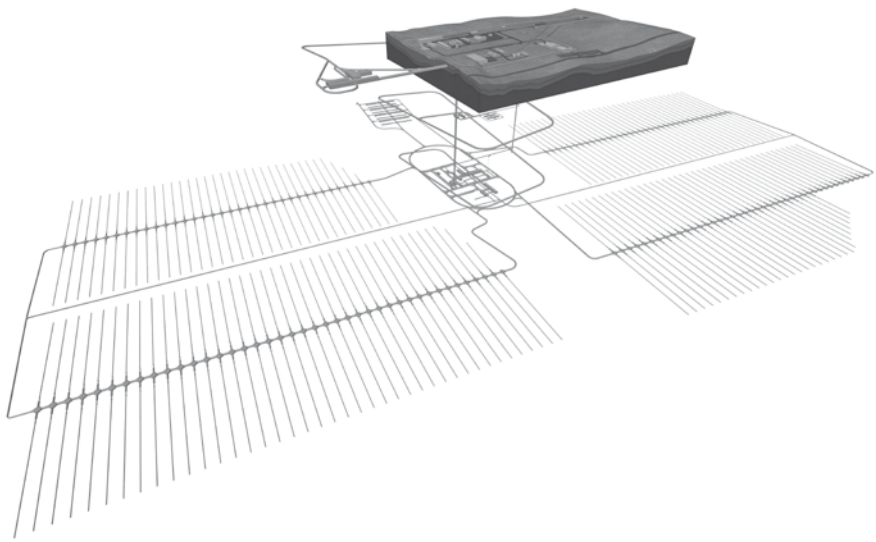
PERSONNEL, MATERIAL AND TECHNICAL MATTERS

The plan of activities for 2015 contained 53 approved work positions. When necessary, certain work for SÚRAO is supplied for the fulfilment of specific tasks or in the form of one-off or fixed-term employment contracts. SÚRAO's staff attended various training courses in compliance with legislative requirements; these courses related to obligatory professional training, the further improvement of qualifications and language training. SÚRAO's statutory obligations concerning health and safety at work and fire protection (set out by the Labour Code and the Fire Protection Act) were met by employing a specially qualified person.

> **SÚRAO fulfilled its obligation as set out in Act 435/2004 (the Employment Act) specifying the proportion of handicapped persons in the total number of employees. SÚRAO has established a cultural and social fund in compliance with Regulation 114/2002 which is used to assist its employees in terms of the cost of meals and state contributory supplementary pensions.**

Since the end of 2000 SÚRAO's headquarters have been located in a completely refurbished Interior Ministry building at Dlážděná Street 6, Praha 1 and since 2012 it has leased additional office space in a neighbouring building at Dlážděná Street 4. SÚRAO subsequently acquired the office technology and company cars required in order to meet its various responsibilities.

Experimental Operation



During the course of the next 10 years, experiments will be carried out in the underground laboratory in order to test the safety and feasibility of technologies employed in deep repository construction and the behaviour and stability of the surrounding rock environment. Leading Czech and foreign scientific and technical organisations will participate in the research.

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FINANCIAL MANAGEMENT

SÚRAO's activities are financed primarily from the Nuclear Account and Ministry of Industry and Trade funds in compliance with the Atomic Act, Article 28, paragraph 1 which sets out rules for the management of radioactive waste disposed of prior to the Act coming into force.

SÚRAO is authorised to manage state property and consequently maintains the relevant accounts in pursuance of Act 563/1991 on accounting, Act 218/2000 on budgeting rules, and implementing Regulation 410/2009. SÚRAO's budget is determined according to a budget structure defined by Ministry of Finance Regulation 323/2002, as amended.

SÚRAO creates no reserves and all its revenues from services provided to radioactive waste producers as well as unused budget funding (provided as transfers) are returned to the Nuclear Account.

7.1 **Utilisation of Budget Funding in 2015** (CZK thousand)

Item No.	Item	Approved budget	Adjusted budget	Budget utilization	Utilization percentage
5	**Current expenses**	**175,500**	**178,500**	**169,015**	**94.7**
501	Wages and salaries	21,326	21,432	21,567	100.6
502	Other remuneration	1,260	1,266	1,206	95.3
532	Non-investment transfers to municipal budgets	82,200	85,200	83,937	98.5
6	**Capital expenses**	**148,400**	**145,400**	**90,950**	**62.6**
61	Asset acquisitions and related expenses	148,400	145,400	90,950	62.6
	Total expenses	**323,900**	**323,900**	**259,965**	**80.3**
4	**Transfers received**	**319,200**	**319,200**	**257,800**	**80.8**
411	Non-investment transfers from the central budget	170,800	173,800	165,800	97.1
421	Investment transfers from the central budget	148,400	145,400	92,000	62.0
	Funding through chapter 322 of the MPO	4,700	4,700	4,181	89.0
	Total revenues	**323,900**	**323,900**	**261,981**	**80.9**

Note: Items 411 and 421 consist of transfers from the Nuclear Account; CZK 4,181,020 was received as a transfer from the budget of the Ministry of Industry and Trade. In transfers received, funds transferred to the Nuclear Account (payments by small RW producers and other Authority revenues) are not included. Revenues from the Nuclear Account which exceed current year expenses are transferred back to the Nuclear Account at the beginning of the following year.

Expenses are subdivided into current expenses and capital expenses. In addition to items included in mandatory indicators, expenses concerning purchases and services relating to repository operation and expenses ensuing from external consultancy, telecommunications and administration services are included in current expenses. Expenses relating primarily to the DGR programme including research and development work, the reconstruction of existing repositories and expenses resulting from other partial investment purchases are included in capital expenses. A detailed review of the utilisation of budget funding by individual item, accompanied by a commentary, has been submitted to SÚRAO's Board.
The exceeding of the utilisation of budget funding in item 501 is in compliance with Article 25, paragraph 1b of Act 218/2000 on Budgeting Rules. Funds to cover these expenses were transferred from the reserve fund.

AUDITORS' REPORT

In compliance with the Atomic Act, Article 30, SÚRAO´s accounting system and financial statements for 2015 were subjected to an external audit which was conducted by the auditor Zdenka Fraňová, registered in the list of auditors companies maintained by the Chamber of Auditors of the Czech Republic under registration number 2006.

EVALUATION OF SÚRAO'S PERFORMANCE

SÚRAO met its responsibilities for the safe and reliable operation of Czech radioactive waste repositories during 2015 as defined in the Atomic Act. Preparations continued for the development of a deep geological repository in which high-level radioactive waste and spent nuclear fuel will be disposed of in the future. Concerning the efficient utilisation of budget funds for external subcontractors, RAWRA complied with the provisions of Act 137/2006 on Public Contracts. Funds were employed efficiently and in compliance with the budget in order to fully meet the targets set out in the yearly plan of activities.

SÚRAO'S BOARD STATEMENT

SÚRAO's Board reviewed the SÚRAO Annual Report for 2015 at its 88th meeting on 18 March 2016 and recommended the Annual Report be submitted to the Ministry of Industry and Trade for subsequent consideration by the Government.

BALANCE SHEET AS AT 31 DECEMBER 2015
(CZK THOUSAND)

		Current period			Previous
		Gross	Correction	Net	period
ASSETS		**1 013 743**	**389,112**	**624,631**	**574,284**
A.	**Fixed assets**	**991,448**	**389,112**	**602,336**	**538,972**
I.	DIntangible fixed assets	537,646	248,628	289,020	241,024
II.	Tangible fixed assets	453,788	140,486	313,302	297,948
III.	Long-term financial assets	0	0	0	0
IV.	Long-term receivables	14	0	14	0
B.	**Current assets**	**22,295**	**0**	**22,295**	**35,312**
I.	Stocks	861	0	861	1,033
II.	Short-term receivables	622	0	622	1,477
III.	Short-term financial assets	20,812	0	20,812	32,802

LIABILITIES		**624,631**	**547,284**
C.	**Equity capital**	**594,203**	**543,162**
I.	Owned capital and adjustments	730,495	639,545
II.	Financial funds	3,349	4,600
III.	Profit/Loss account	-174,126	-131,287
IV.	Budget management income and expenditure account	34,485	30,304
D.	**Liabilities**	**30,429**	**31,122**
I.	Reserves	0	0
II.	Long-term payables	0	0
III.	Short-term payables	30,429	31,122

PROFIT AND LOSS ACCOUNT AS AT 31 DECEMBER 2015 (CZK THOUSAND)

Item No.	Název položky	Current period Main activity	Previous period Main activity
A.	**Total expenses**	**228,713**	**146,175**
I.	Expenses from activities	120,963	113,738
II.	Financial expenses	150	90
III.	Transfer expenses	107,560	32,347
IV.	Shared tax expenses	0	0
B.	**Total revenues**	**185,874**	**106,934**
I.	Revenues from activities	21,036	23,535
II.	Financial revenues	3	2
III.	Revenue from taxes and charges	0	0
IV.	Transfer revenue	164,834	83,396
V.	Revenue from shared taxes		
VI.	SURPLUS/DEFICIT		
1.	Surplus/deficit before tax	-42,838	-39,241
2.	Surplus/deficit after tax	-42,838	-39,241

AUDITORS' REPORT INCLUDING THE AUDITORS' OPINION

We have audited the financial statements of the Radioactive Waste Repository Authority with headquarters in Prague 1, Dlážděná 6, post code 110 00, company identification number 66000769, comprising the balance sheet and the profit and loss account as at 31 December 2015, the cash flow statement as at 31 December 2015 and an annex to the financial statements which includes a detailed description of the methods employed and other explanatory information.

MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

The management of the Radioactive Waste Repository Authority is responsible for compiling financial statements which provide a true and fair view in accordance with the accounting regulations effective in the Czech Republic and for such an internal control system which the management regards as necessary for the compilation of the financial statements that are free from material misstatement, whether due to fraud or error.

AUDITORS' RESPONSIBILITY

Our responsibility is to report our opinion on the financial statements audited. The audit has been conducted in accordance with the Czech Auditor Act, International Standards on Auditing and relevant implementing regulations issued by the Czech Chamber of Auditors. Under these legal regulations and in adherence to relevant ethical standards each audit is planned and performed in such a way as to provide the auditors with sufficient evidence to give reasonable assurance that the financial statements are free from apparent material misstatements.

The audit includes audit procedures aimed at obtaining conclusive evidence relevant to the amounts and data provided in the financial statements. The audit procedures employed depend on the auditor's judgement, including his assessment of the potential risk that the financial statements might contain considerable (material) irregularities due to fraud or mistake. As part of the risk assessment process the auditor considers the internal control system relevant to the compilation of financial statements which provide a true and fair view. The aim of the assessment is to recommend adequate audit procedures without expressing the auditor's view of the efficiency of the internal control system of the accounting entity. The audit also includes an assessment of the adequacy of the accounting methods employed and estimates made by the management of the accounting entity, as well as an evaluation of the overall adequacy of the presentation of information in the financial statements.

We believe that the probative information obtained gives an adequate basis for forming our opinion.

AUDITORS' OPINION

In our opinion, the financial statements give a true and fair view of the assets and liabilities of the Radioactive Waste Repository Authority with headquarters in Prague 1, Dlážděná 6, post code 110 00 as at 31 December 2015 as well as of costs, revenue, profit/loss and cash flows as at 31 December 2015 in compliance with the accounting regulations effective in the Czech Republic.

Zdenka Fraňová
auditor
Czech Chamber of Auditors registration number 2006

SÚRAO'S BOARD

The activities of SÚRAO are supervised by its Board the membership of which comprises representatives of the MPO, MF and MŽP, major radioactive waste producers and the general public. SÚRAO's Board, by means of its decisions and recommendations, takes an active part in the activities of SÚRAO.

IN 2015 SÚRAO´S BOARD CONSISTED OF THE FOLLOWING MEMBERS:

Mr. Ladislav Štěpánek (Vice-Chairman of the Board), a member of the Board of Directors at ČEZ;

Mr. Ladislav Havlíček, Head of the Strategy and Fuel Cycle Department at ČEZ;

Ms. Zdeňka Vojtíšková, Economist at the MF;

Mr. Martin Holý, Director of the Geology Department at the MŽP;

Mr. Jan Horník, Senator, Chairman of the Boží Dar town council;

Mr. Pavel Gryndler, Environment Department of the Litoměřice town council;

Mr. Vítězslav Jonáš, Chairman of the "Energy Třebíčsko Region" Association, Member of the Dukovany local council;

Mr. Bronislav Grulich, Chairman of the Jáchymov town council;

Mr. Karel Křížek, MBA, CEO of ÚJV Řež;

Mr. Štěpán Svoboda, Head of the Research & Development Centre at Chemcomex Praha.

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ABBREVIATIONS USED

CEG	Centre for Experimental Geotechnics
ČBÚ	Czech Mining Authority
ČVUT	Czech Technical University in Prague
DGR	deep geological repository
DOPAS	pan-European Full-scale Demonstration of Plugs and Seals Experiment
HBZS Most	the Principal Mining First-Aid Station in Most
IAEA	International Atomic Energy Agency
MF	Ministry of Finance
MPO	Ministry of Industry and Trade
MŽP	Ministry of the Environment
NPP	nuclear power plant
OECD/NEA	Nuclear Energy Agency of the Organisation for Economic Co-operation and Development
SKB	Swedish Nuclear Fuel and Waste Management Company
SNF	spent nuclear fuel
SÚJB	State Office for Nuclear Safety
SÚRAO	Radioactive Waste Repository Authority
ÚJV Řež	Nuclear Research Institute Řež

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