



národní
úložiště
šedé
literatury

Zpráva o činnosti v roce 2014

Správa úložišť radioaktivních odpadů
2015

Dostupný z <http://www.nusl.cz/ntk/nusl-263300>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 05.05.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní nusl.cz.



SÚRAO

RADIOACTIVE
WASTE REPOSITORY
AUTHORITY



**ANNUAL
REPORT
2014**



SÚRAO'S MISSION

The Radioactive Waste Repository Authority (SÚRAO) is a state organisation established under the provisions of Article 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.

TABLE OF CONTENTS

Managing Director's Introduction	4
Current Situation in Radioactive Waste Management	8
Operation of the Dukovany Repository	9
Operation of the Richard and Bratrství Repositories	11
Development of a Deep Geological Repository for High-level Waste and Spent Nuclear Fuel	19
Research and Development Relating to Engineered Barriers and Near- and Far-Field Processes	25
Public Relations	30
Managerial, Technical and Administrative Matters	33
Personnel, Material and Technical Matters	35
Financial Management	38
Auditors' Report Including the Auditors' Opinion	44
SÚRAO's Board	45
Contacts	46
Abbreviations Used	47



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 2014.

2014 was a year of major anniversaries relating to radioactive waste disposal in the Czech Republic. The Bratrství repository, near Jáchymov, celebrated 40 years of operation, the Richard repository, near Litoměřice, 50 years of operation and the now closed Hostim repository, near Beroun, 55 years since the commencement of radioactive waste disposal. All three repositories are regularly monitored by the State Office for Nuclear Safety; radioactive waste management is carried out in total compliance with set limits and conditions for the safe operation of individual repositories.

Significant progress was made in terms of preparations for the construction of the Czech deep geological repository. The Ministry of the Environment issued its decision concerning the identification of investigation areas within all seven candidate sites. Subsequently, however, certain participants in the procedure filed appeals against the decision of the Ministry; a number of NGOs filed an appeal with concern to the Kraví hora site and communities which make up the Horka site withdrew a previously filed appeal. With regard to the other sites, only certain communities appealed. The appeals will be considered by the Appeals Commission of the Ministry of the Environment, a body which advises the Minister, and the final decision will be issued by the Minister in due course. The identification of investigation areas makes up just the first stage of the geological investigation process. 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. We are striving to improve the efficiency of the site selection procedure so as to be able to fulfil our obligations ensuing from a number of Government Decisions and the Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic. Indeed, last year witnessed a significant breakthrough with the Government accepting the updated version of the Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic so as to fully comply with Directive 2011/70/Euratom. The Concept provides a useful tool in terms of the long-term safe disposal of radioactive waste in the Czech Republic in full compliance with relevant legal requirements and international obligations.

As part of the preparation stage for the construction of a deep geological repository for the disposal of high-level radioactive waste and spent nuclear fuel, SÚRAO continued to support research and demonstration projects with the aim of gathering information on repository feasibility and the long-term behaviour of the disposal system and the surrounding rock mass under various conditions as required for safety analysis purposes. SÚRAO continued the implementation of the Bukov Underground Research Facility project the objective of which is to gather arguments, data and characteristics from the rock environment at depths corresponding to those envisaged for the deep geological repository. In addition, a project concerning the development of a waste disposal container was launched in 2013. This project, which concerns engineered barriers in general, is of crucial importance to SÚRAO and it will significantly impact the technical, safety and economic solutions of the future DGR disposal system. The container must meet all the relevant criteria in terms of required lifetime and safety. SÚRAO, in cooperation with the Centre for Experimental Geotechnics of the Czech Technical University in Prague continues 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).

A very important aspect of our work is to ensure the understanding of both the professional and general public of the issues in which we are involved. In addition to research projects, special excursions are organised on a regular basis for inhabitants of DGR candidate local communities to the Richard repository and the Josef underground research laboratory as well as to the Dukovany and Temelín NPPs. An excursion was organised during the year for community representatives to facilities operated by PURAM, the Hungarian national agency responsible for the preparation and implementation of programmes for the safe disposal of all types of radioactive waste produced in Hungary. Moreover, we continue to provide information to all those living in candidate sites as well as the general public via information leaflets and the “News from SÚRAO” newsletter. We have also designed and launched a new educational programme for schools aimed at familiarising high school and primary school students with radioactive waste management issues.

I consider the activities of the Working Group for Dialog on the Deep Geological Repository a great success; transparency should be respected in all areas in which the state is involved both at the national and international levels. Several group members pointed out in 2014 that the Working Group faced limits related to its status as an advisory body to the Minister. Discussion on this issue concluded therefore that the Working Group should be incorporated into the Government Council for Raw Materials and Energy Strategy, which was duly implemented. 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 on the Council. The new status of the Working Group resulted in direct support from the Government and certain Ministries and a clear definition of the relationship between individual players in the overall process.

Finally, allow me to say that, as in previous years, SÚRAO successfully fulfilled its mission in 2014. 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. Thank you.

A handwritten signature in black ink, appearing to read "Jiří Konek". The signature is fluid and cursive, with the first name "Jiří" and last name "Konek" clearly distinguishable.

7 40 50 55
10 000 55 1000
500 40 107 000



The Richard repository celebrated 50 years of safe operation in 2014. The repository is designed for the disposal of low-level and intermediate-level waste generated by the medical, industrial and research sectors. It was constructed in a small part of the extensive Richard mine complex near Litoměřice and has been in operation since 1964.





CURRENT SITUATION IN RADIOACTIVE WASTE MANAGEMENT

Low-level and intermediate-level waste makes 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 000m³ (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 volume of 10,249m³, 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 complex 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 1,200m³. 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 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). Until the time that the DGR comes into operation, such waste will be 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. 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 2014, the repository accepted 2,497radioactive waste disposal packages (510.6m³), of which 2,452 metal 200-litre drums, 43 storage pallets and 2 pieces of solid waste. Waste disposal packages were placed in vaults D06 and D07.

The Dukovany NPP (EDU) delivered for disposal a total of 2,061 waste disposal packages (415,6m³), of which 939 disposal packages of bituminised waste, 73 disposal packages of unstabilised waste and 1,049 waste disposal packages of used ion exchangers solidified into an aluminosilicate matrix.

The Temelín NPP (ETE) delivered for disposal 351 waste packages (70,8m³), of which 250 waste packages of bituminised waste, 97 waste packages of unstabilised waste and 4 waste disposal packages of used ion exchangers solidified into an aluminosilicate matrix.

ÚJV Řež delivered for disposal 85 waste packages (24.2m³), of which 25 storage pallets containing unstabilised bulky lump waste and 60 pieces of 200-litre drums containing solidified waste.

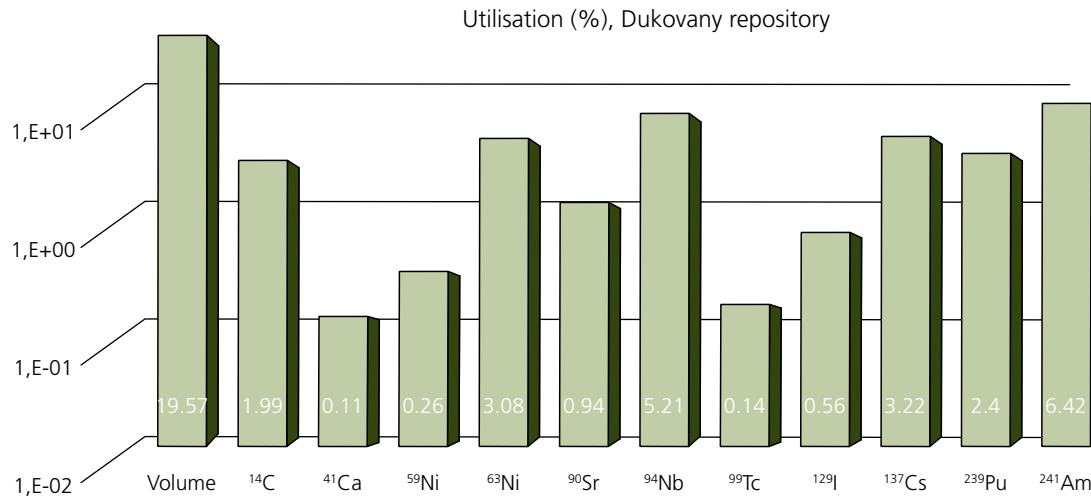
The monitoring of the repository and the surrounding areas was performed in accordance with the approved monitoring programme; no breach of the limits and conditions for the safe operation of the Dukovany repository were detected. Three inspections were conducted by the SÚJB at the Dukovany repository during 2014; no serious breaches were discovered.

Basic information on waste disposed of during 2014 is provided in the following table:

Dukovany repository during 2014:		
Volume of waste disposed of	m³ of waste packages (WP)	510.6 / 2,497
of which at EDU	m³ / WP	415.6 / 2,061
of which at ETE	m³ / WP	70.8 / 351
of which at ÚJV Řež	m³ / WP	24.2 / 85
Mass of the accepted waste	T	671



Overview of the utilisation of the volume and inventory limits of the Dukovany repository as at 31 December 2014



		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m³]	55,000	10,764	19.57	44 236
¹⁴ C	[Bq]	1,00E+13	1.99E+11	1.99	9.80E+12
⁴¹ Ca		3,00E+11	3.15E+08	0.11	3.00E+11
⁵⁹ Ni		3,00E+12	7.82E+09	0.26	2.99E+12
⁶³ Ni		3,50E+13	1.08E+12	3.08	3.39E+13
⁹⁰ Sr		1,00E+13	9.44E+10	0.94	9.91E+12
⁹⁴ Nb		3,00E+10	1.56E+09	5.21	2.84E+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	9.65E+12	3.22	2.90E+14
²³⁹ Pu		6,00E+09	1.44E+08	2.40	5.86E+09
²⁴¹ Am		1,00E+10	6.42E+08	6.42	9.36E+09

OPERATION OF THE RICHARD AND BRATRSTVÍ REPOSITORIES

Both nuclear facilities – the Richard and Bratrství repositories – were operated by SÚRAO during 2014 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 2014, 560 waste packages (112m³) were disposed of at the Richard repository with a total mass of 191t. In addition, a further 17 waste packages (3.4m³) were accepted at this repository. 35 waste packages were disposed of at the Bratrství repository with a total capacity of 7m³. 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 2014 by the SÚJB (five inspections at the Richard repository and three inspections at the Bratrství repository) and the relevant mining supervisory bodies (three inspections at the Richard repository and one inspection at the Bratrství repository). 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).

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 containers for radioactive substances of special form were tested during 2014.

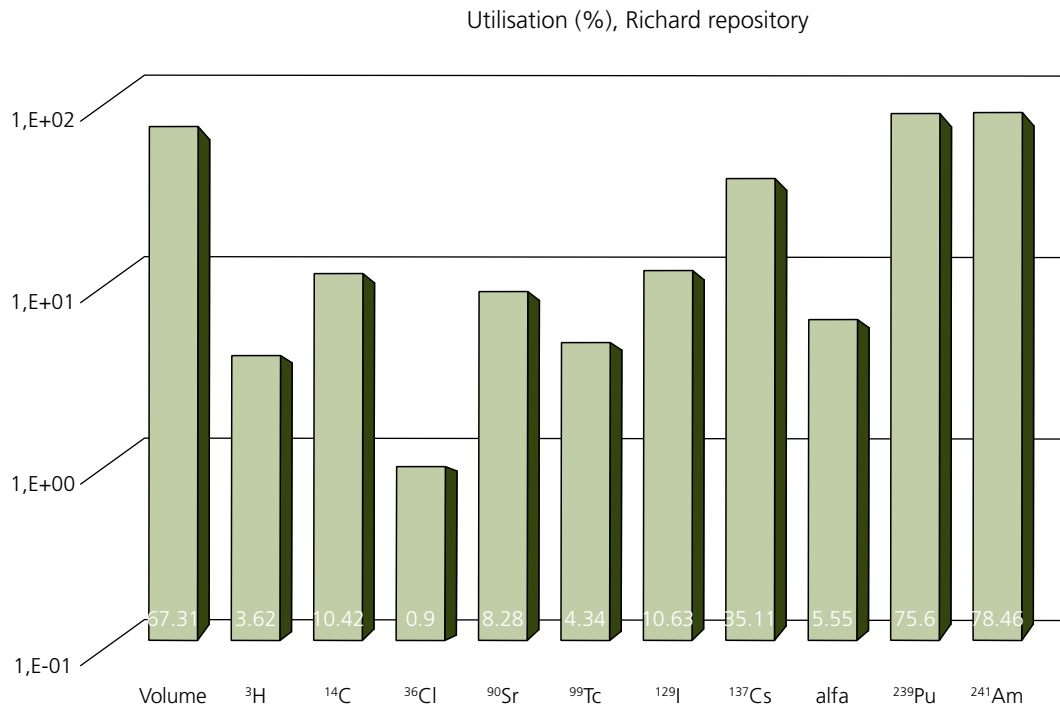
The laboratory also provided consultancy services to container users and manufacturers throughout the year. The laboratory’s total income for 2014 amounted to CZK 227.6 thousand.

Basic information on the waste disposed of during 2014 is provided in the following table:

Richard repository in 2014:		
Volume of waste disposed of	m³ / WP	112 / 560
Mass of the accepted waste	T	191
Number of waste containers accepted for disposal	Number	17



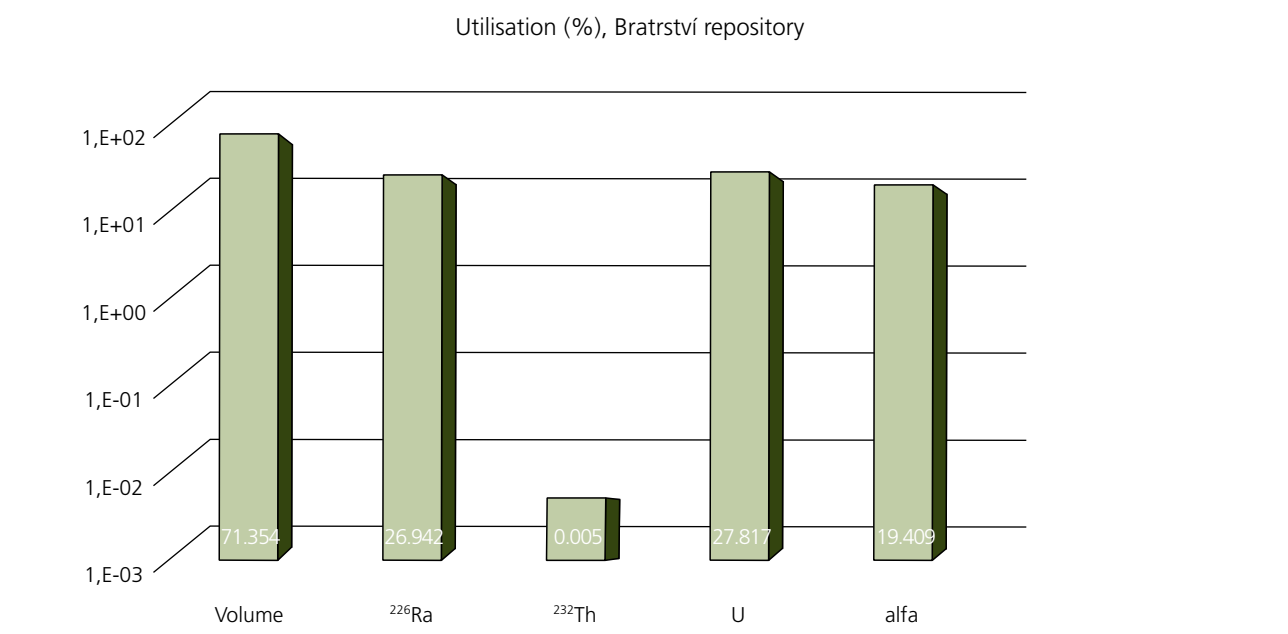
Overview of the utilisation of the volume and inventory limits of the Richard repository as at 31 December 2014



		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m³]	10,249	6,898,5	67.31	3 350.5
³ H	[Bq]	1.00E+15	3.62E+13	3.62	9.64E+14
¹⁴ C		1.00E+14	1.04E+13	10.42	8.96E+13
³⁶ Cl		1.00E+12	9.05E+09	0.90	9.91E+11
⁹⁰ Sr		1.00E+14	8.28E+12	8.28	9.17E+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	3.51E+14	35.11	6.49E+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	1.02E+13	78.46	2.80E+12

Bratrství repository in 2014:		
Volume of waste disposed of	m ³ / WP	7 / 35
Mass of the accepted waste	T	13.1

Overview of the utilisation of the volume and inventory limits of the Bratrství repository as at 31 December 2014



		Limit	Disposed of	Utilisation [%]	Remaining capacity
Volume	[m ³]	1,200	856	71.354	344
²²⁶ Ra	[Bq]	5.00E+12	1.35E+12	26.942	3.65E+12
²³² Th		3.00E+12	1.37E+08	0.005	3.00E+12
U		2.00E+12	5.56E+11	27.817	1.44E+12
alfa		1.00E+13	1.94E+12	19.409	8.06E+12



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.

// 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. //

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 used for safety analysis purposes have been standardised by an SÚJB commission and are used to determine the consequences of potential radionuclide migration from repositories.

Repository safety is ensured provided 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 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 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. 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 emergency preparedness 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. A total of 200 items of nuclear material had been recorded by 31 December 2014.

7 40 50 55
10 100 1000 5000
50 500 401 107 0000



The Bratrství repository, designed for the disposal of low-level and intermediate-level waste containing only naturally occurring radionuclides, has been in operation since 1974. It was constructed in one of the mined cavities of a former uranium mine near Jáchymov and celebrated 40 years of safe operation in 2014.





MINING SAFETY

The operation of the Bratrství and Richard subsurface 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.

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.

In 2013 SÚRAO commenced the implementation of the Bukov Underground Research Laboratory (URL) project. The facility is situated near the Bukov mine complex on level 12 of the Rožná I uranium mine. The conventional blasting method was used during excavation work. Due to Bukov’s URL status as a future research facility, particular attention was devoted to the quality and evenness of the excavation work.

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.

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 be finally disposed of in a deep geological repository. The construction of such a repository in the Czech Republic is envisaged. Safety will be ensured by means of a system of both engineered and natural (geological) barriers which can 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 thereof developed during the period 2008 - 2011 available on SÚRAO's website (www.surao.cz).

“ 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 be finally disposed of in a deep geological repository. ”

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 (Kráv hora) was added to the list of candidate sites.



OVERVIEW OF LOCALITIES POTENTIALLY SUITABLE FOR DEEP REPOSITORY SITING FOR WHICH APPLICATIONS FOR THE IDENTIFICATION OF INVESTIGATION AREAS HAVE BEEN SUBMITTED, THE MUNICIPALITIES CONCERNED AND THE AMOUNT OF STATUTORY FINANCIAL CONTRIBUTIONS AVAILABLE (AS AT 31 DECEMBER 2014)

Site: Hrádek

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km ²	
Rohozná	7.184791	CZK 2,755,437
Nový Rychnov	6.074868	CZK 2,422,460
Miličov	2.968314	CZK 1,490,494
Hojkov	4.308423	CZK 1,892,527
Cejle	2.020374	CZK 1,206,112
Dolní Cerekev	1.755480	CZK 1,126,644
Total	24.312250	CZK 10,893,675

Site: Březový potok

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km ²	
Chanovice	6.579339	CZK 2,573,802
Velký Bor	8.562038	CZK 3,168,611
Pačejov	2.924166	CZK 1,477,250
Maňovice	2.829812	CZK 1,448,944
Olšany	1.353224	CZK 1,005,967
Kvášňovice	0.864983	CZK 859,495
Total	23.113562	CZK 10,534,069

Site: Magdaléna

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km ²	
Jistebnice	17.437767	CZK 4,000,000
Nadějkov	4.785981	CZK 2,035,794
Božetice	1.349120	CZK 1,004,736
Total	23.572868	CZK 7,040,530

Site: Horka

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km ²	
Hodov	9.600379	CZK 3,480,114
Rohy	5.371884	CZK 2,211,565
Oslavička	3.414927	CZK 1,624,478
Budišov	2.928363	CZK 1,478,509
Nárameč	2.254690	CZK 1,276,407
Vlčatín	1.865850	CZK 1,159,755
Osové	1.034598	CZK 910,379
Rudíkov	0.990977	CZK 897,293
Oslavice	0.798283	CZK 839,485
Total	28.259951	CZK 13,877,985

Site: Kraví hora

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km ²	
Střítež	5.775041	CZK 2,332,512
Drahonín	3.474158	CZK 1,642,247
Moravecké Pavlovice	3.427197	CZK 1,628,159
Bukov	1.830774	CZK 1,149,232
Věžná	2.168012	CZK 1,250,404
Sejřek	0.330972	CZK 699,292
Milasín	0.069181	CZK 620,754
Olší	0.033889	CZK 610,167
Total	17.109224	CZK 9,932,767

Site: Čihadlo

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km²	
Lodhéřov	14.878511	CZK 4,000,000
Deštná	5.213349	CZK 2,164,005
Světce	3.642110	CZK 1,692,633
Pluhův Žďár	2.356508	CZK 1,306,952
Total	26.090478	CZK 9,163,590

Site: Čertovka

Encroachment of the determined investigation areas into the territory of respective municipalities		Annual contribution in compliance with Government Decision 416/2002
Municipality	Encroachment of the investigation area in km²	
Blatno	13.424151	CZK 4,000,000
Lubenec	9.499686	CZK 3,449,906
Tis u Blatna	4.787860	CZK 2,036,358
Žihle	1.359414	CZK 1,007,824
Total	29.071111	CZK 10,494,088

Any decision on repository siting in a certain locality will involve detailed geological investigation work which must be preceded by a decision on the identification of an investigation area. Consequently, in 2013 applications for the identification of investigation areas in all six originally selected locations as well as the Kraví hora site 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 hearings were held by the Ministry of the Environment during 2014 at the regional level 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; consequently, none of the decisions on the identification of investigation areas had come into force by 31 December 2014.

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, geomechanical and other descriptive models of the localities required for the conducting of safety analysis and feasibility studies.

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.

The geological investigation of the localities will be carried out in three stages. The first stage will consist of surface geological investigation work without land encroachment (not involving technical operations) the aim of which will be to verify fault and fracture structures in the rock environment by means of geological mapping, structural analysis, geophysical measurements and the synthesis of hydrogeological and geochemical information. Tenders were invited in 2014 for the "Geological investigation of localities for intrusion into the Earth's crust for radioactive waste disposal in underground facilities in the site selection stage". However, a number of conditions changed during the tendering procedure which could not be reflected in the assignment documentation and which led SÚRAO to cancel the tender.

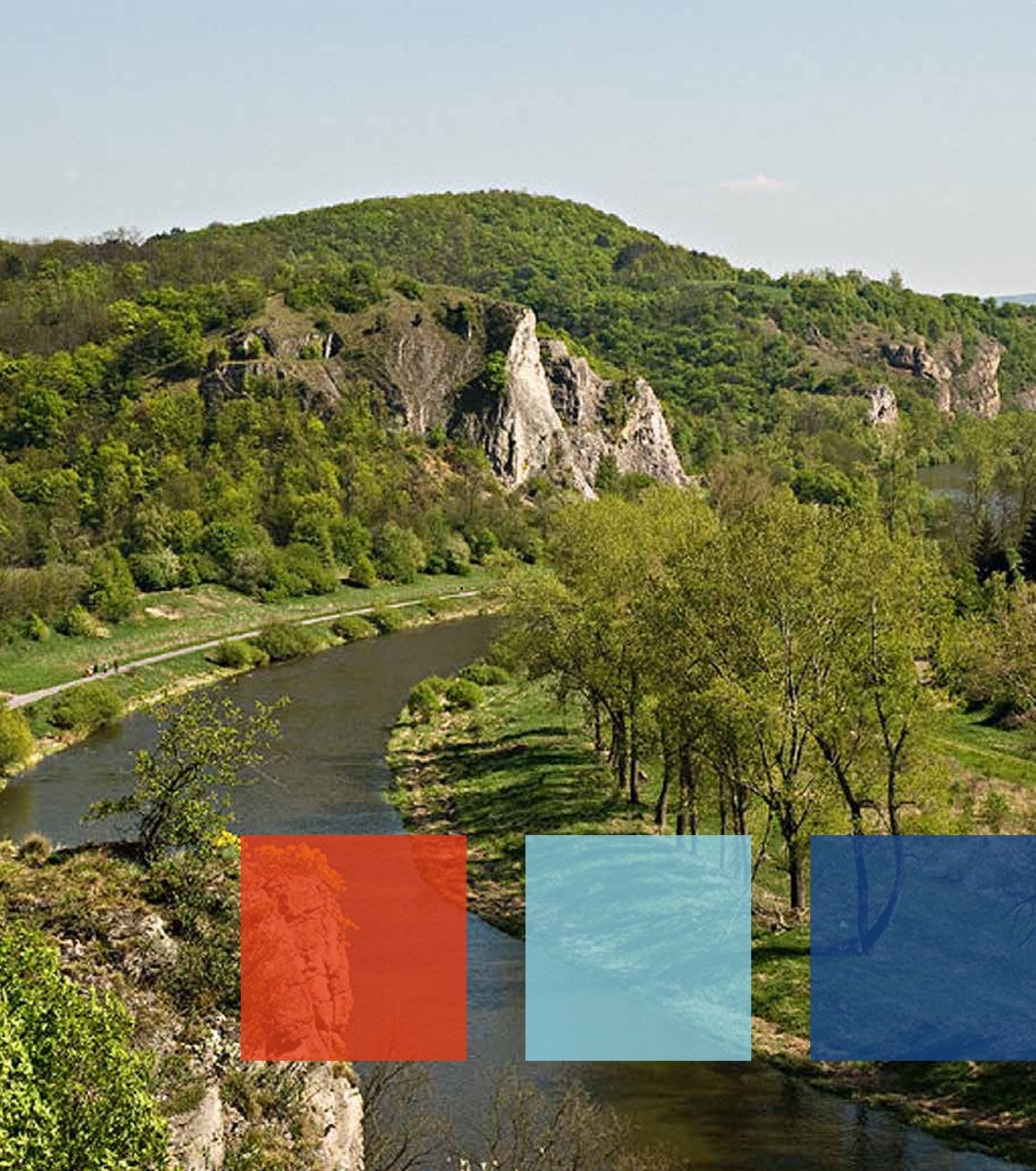
SÚRAO worked intensively during 2014 on refining the requirements, conditions and criteria involved in the eventual construction of the deep geological repository, with concern to which it is envisaged that discussions will be held in 2015 with the various parties concerned, primarily the Ministry of Industry and Trade, the Ministry of the Environment and the SÚJB.

SÚRAO has prepared a proposal for a research study involving the assessment of the wider surrounding areas of the Czech Republic's two nuclear power stations (each area covering more than 200km²). It is planned that the tender will be launched in the first half of 2015.

7 40 55 50 55 55
10 000 55 50 50
55 500 40 10 7 000



The Hostim repository was opened in 1959 and was in operation from 1959 to 1964. The repository is currently closed and its impact on the environment is monitored. The closed Hostim repository is situated in the long-abandoned Hostim limestone quarry (also known as Alcazar) around 3km east of Beroun. 2014 marked 55 years since the opening of the repository.





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 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.

A project for the construction of the Bukov URL (located within the Rožná uranium mine complex) has been underway since 2013. Construction continued in 2014 according to schedule; two boreholes were drilled in order to verify the suitability of the rock massif. In addition, a project was prepared aimed at the complex geological characterisation of the underground spaces at the Bukov URL. During the experimental stage the facility will be used for the research of, and data collection from, crystalline rocks (geological, structural-tectonic, geotechnical and hydrogeological tests) at depths similar to those envisaged for the future repository, and methods to be employed in the long-term monitoring of the repository will be tested.

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 2014 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 2014. 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.

RESEARCH AND DEVELOPMENT RELATING TO ENGINEERED BARRIERS AND NEAR- AND FAR-FIELD PROCESSES

The so-called "Medium-term Research and Development Plan for Deep Repository Siting in the Czech Republic for 2015-2025" was drawn up in 2014 concerned with obtaining the information required for the assessment of the safety of repositories at selected sites as a result of which assignment documentation for a project entitled "Research Support for the Assessment of Deep Repository Safety" was prepared. 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 will consist 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 will also provide 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.

The preparation of the assignment documentation for the characterisation stage of the Bukov URL project commenced in 2014. The objective of the project is to verify available methodologies and tools to be employed in the preparation of 3D structural geological, geomechanical and hydrogeological models and to characterise in detail the rock environment with the aim of designing future experiments to be conducted by SÚRAO.

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. Consequently, 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. Particularly important in this respect was the creation of the IGD-TP platform (Implementing Geological Disposal of Radioactive Waste Technology Platform) which 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). The DOPAS project, 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 (Finland), is of primary importance. The project involves the design and construction of deep repository sealing plugs 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 International Atomic Energy Agency (IAEA) and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (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 for the Deep Disposal of Spent Nuclear Fuel up to the Sample Realisation Stage" programme were 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.

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 SKB.

The Decovalex D2011 international project was concluded in 2012 with the final assessment of the project. The international project team included specialists from Technical University in Liberec and the Institute of Geonics of the Czech Academy of Sciences in Ostrava. The follow-up D2015 project was subsequently launched with the objective of validating 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. .

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 (Euratom), the IAEA and OECD/NEA 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 International Atomic Energy Agency, 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.

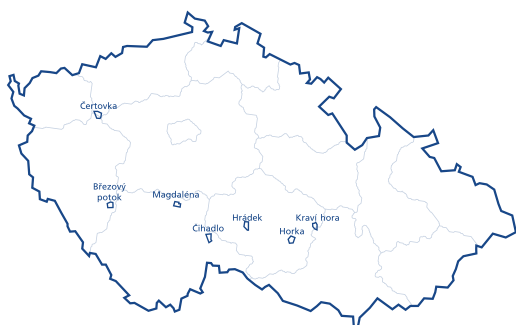
SÚRAO is active in a number of research and development projects financed by the European Commission both as a mediator and provider of support for the participation of Czech firms and research institutions in such projects.

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).

7 40 55 50 55
500 500 500
500 401 07 000



Geological investigation work will be carried out in three stages. The first stage will concern the verification of the integrity and intactness of the rock medium at all 7 candidate sites by means of surface geological investigation. The data collected will be used for the preparation of preliminary safety and technical feasibility studies concerning the construction of a potential deep repository for all the sites concerned. Thus the comparison of individual sites will be more transparent and will fully respect economic considerations. The second stage of the investigation will involve deep borehole drilling aimed at verifying geological conditions at a depth of up to one kilometre. The data gathered in both stages will serve for the identification of at least two sites which will subsequently be presented to the Government for approval. This stage of the process will also include the opinions of the municipalities concerned. The third phase of investigation work will involve further geological and technical work at the two candidate sites.





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 2014. 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 October 2014 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. The "Calla" association filed appeals concerning all seven sites, a number of NGOs filed an appeal concerning the Kraví hora site and communities making up the Horka site withdrew a previously filed appeal. As for the other sites, only certain communities of the several which make up the sites appealed. The appeals will be considered by the Appeals Commission of the Ministry of the Environment, a body which advises the Minister, and the final decision will be issued in due course by the Minister.

A further important event in 2014 consisted of the celebration of half a century of operation of the Richard repository near Litoměřice which provides for the disposal of low- and intermediate-level radioactive waste generated by the industrial, medical and research sectors. The facility is assessed continuously in terms of seismicity, the geotechnical stability of the mine workings, the monitoring of hydrogeological conditions in the surrounding rock environment and the immediate area and air, water and surface concentrations of radon and tritium. The results obtained to date show that repository operation meets all the prescribed safety criteria and the values recorded do not exceed set limit values. A number of studies are currently in the preparation stage concerning the reconstruction of the repository aimed at optimising the disposal capacity. In addition to the 50th anniversary of the opening of the Richard repository, 2014 marked 55 years since the commencement of the disposal of radioactive waste in the Czech Republic at the closed Hostim repository and nearly 40 years of safe operation at the Bratrství repository near Jáchymov.

Apart from these milestone events, SÚRAO organised during the year a number of smaller events the benefits of which it is hoped will be felt over the long term. SÚRAO devotes particular attention to communication with the public and, specifically, public awareness campaigns aimed at reminding the public that radioactivity is a normal part of our everyday lives and that we know how to safely dispose of radioactive waste in the Czech Republic. Two new exhibitions relating to this issue were opened during the year in newly-opened information centres in Bystřice-nad-Pernštejnem and Jáchymov.

With the aim of improving awareness of radioactive waste management issues, SÚRAO organised excursions to the Richard repository, the Josef Underground Research Centre and the Dukovany and Temelín NPPs. More than 300 inhabitants from DGR candidate communities participated in the excursions which were aimed at enhancing personal experience of nuclear issues. In addition, SÚRAO traditionally organises annual excursions which provide community representatives with the opportunity to visit foreign facilities concerned with nuclear waste issues. In 2014 the excursion was to the facilities of PURAM, the Hungarian national agency responsible for the preparation and implementation of programmes for the safe disposal of all types of radioactive waste produced in Hungary. Following technical excursions to nuclear facilities, participating community representatives discussed a number of issues with their Hungarian counterparts concerning living in the vicinity of the Paks nuclear power station, the interim storage facility and the Batáapáti repository for low- and intermediate-level waste.

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 primary and high schools and universities; the presentation provides plenty of detailed information and is accompanied by a number of practical examples. In the future SÚRAO plans to further improve its educational programme – a new presentation is in the preparation stage as is a brochure for those who want to know more about the issue and teachers will be offered worksheets on the subject aimed at making physics lessons more interesting.

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 in Prague 1, Dlážděná 6, 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 Dolní Cerekev. A total of 1,200 students from Prague and the surrounding area visited the main information centre in Prague in 2014. 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 2014. As far as those living in the Čertovka site are concerned, particularly in the towns of Lubenec, Blatno and Žihle, SÚRAO also regularly publishes information on its activities in local newspapers.

“ Consequently, SÚRAO opened two new exhibitions relating to this issue in new information centres in Bystřice nad Pernštejnem and Jáchymov. ”

SÚRAO has a statutory obligation to provide information according to Act 109/1999 on free access to information. Five applications for information under the Act were received during 2014.

Provision of information to the public during 2014 according to Act 109/1999 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 GEOLOGICAL 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 Geological Repository (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 group is concerned with improving the transparency of the decision-making process regarding deep geological 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. The main priority of the Working Group 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. SÚRAO has a representative in the Working Group 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 procedural status of the Working Group constituted a major issue in 2014. Certain group members pointed out that the WG faced significant limits related to its status and role in the decision-making process. In response, the Dialogue working group organised a workshop devoted to this and other issues in the Senate in May 2014 which was attended by representatives of the Senate Committee on Regional Development, the Public Administration, environmental groups, SÚRAO and ÚJV Řež. The workshop concluded that a more appropriate legal status must be determined so that the Working Group can work independently and have both a more transparent structure and specifically defined responsibilities. Group members subsequently met with the Minister of Industry and Trade. According to the conclusions of the discussion, it is planned that the WG will be 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 Working Group 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.

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 2014 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 2014 CZK 1,516,219,900 while the yearly contribution made by the Research Centre Řež, a ÚJV Řež subsidiary, amounted to CZK 525,000. 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 2014 amounted to CZK 20,578,500.

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 609 million. Assets on the Nuclear Account as at 31 December 2014 amounted to CZK 22.7 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 2014 at 13 organisations comprising a total of 32 facilities which were found to meet the following conditions:

- the 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.

A summary report on audits performed in 2014 aimed at verifying the creation of financial reserves for the future decommissioning of nuclear plants and other nuclear facilities was duly prepared and presented to SÚRAO's Board and subsequently to the SÚJB in accordance with SÚRAO Statutes.

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 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 property owned by the Czech Republic and Act 137/2006 on public contracts.

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. Due to restrictions on the number of approved work positions, the internal auditor is also responsible for the verification of the creation of financial reserves for the future decommissioning of nuclear plants and other nuclear facilities. Internal auditing is increasingly focusing on current requirements, 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 Assurance System complying with the EN ISO 9001/2008 standard. The system is concerned with SÚRAO's principal activities as set out by the Atomic Act, Article 26 and the full range of support processes relating to the operation of the Authority. Quality assurance requirements are principally applied with concern to research and development in the field of radioactive waste management and repository operation. The main objectives of the Quality Assurance System are to ensure both efficiency and compliance with established work processes with respect to all aspects of SÚRAO's activities.

42 changes were made in 2014 to Quality Assurance System internal management documents due to updating and process modifications.

Specific targets for 2014 were set out by the respective Decision of the Managing Director and subsequently they were assessed at management meetings; the findings were then used for the setting of quality targets for the following year. Three audits were conducted in 2014; no discrepancies or serious deficiencies were detected during the audits.

Twelve external inspections of SÚRAO facilities and performance were conducted by the SÚJB during 2014. In addition, the Regional Mining Authority in Most performed two inspections and the Principal Mining First-Aid Station in Most also performed two inspections. No serious deficiencies were detected during these inspections and a small number of minor issues were cleared up quickly to the full satisfaction of the parties concerned.

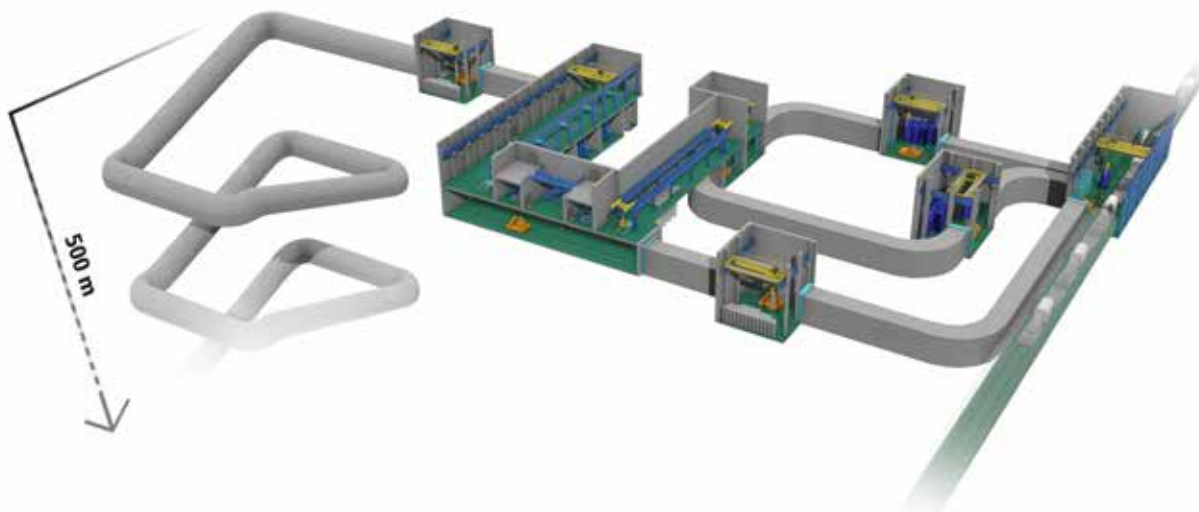
PERSONNEL, MATERIAL AND TECHNICAL MATTERS

The plan of activities for 2014 contained 49 approved work positions. The average registered number of physical employees during the year was 45. 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.

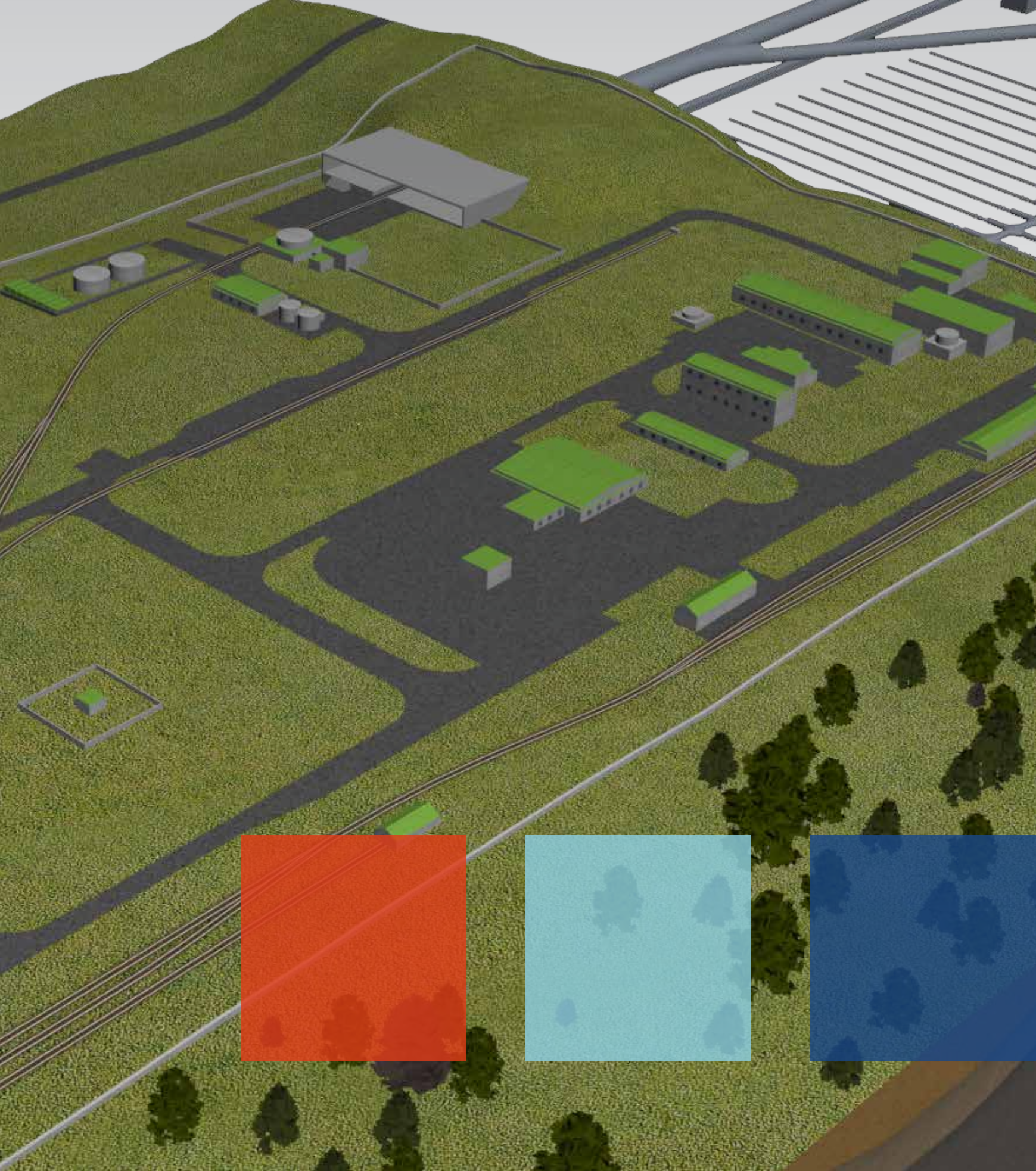
SÚRAO fulfilled its obligation as set out in Act 435/2004 (the Employment Act) specifying the proportion of handicapped persons in the total number of employees. SÚRAO has established a cultural and social fund in compliance with Regulation 114/2002 which is used to assist its employees in terms of the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

500



It is planned that the deep repository in the Czech Republic will be constructed in a suitable granite rock mass approximately 500 metres beneath ground level. Construction is scheduled to commence in 2050. Until that time research, investigation and design activities will continue as will dialogue with the public relating to repository site selection and preparations for construction.





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.

Utilisation of Budget Funding in 2014

Item No.	Item	CZK thousand	Approved budget	Adjusted budget	Budget utilization	Utilization percentage
5	Current expenses		166,000	166,000	88,106	53.1
501	Wages and salaries		18,673	18,782	19,047	101.4
502	Other remuneration		1,121	1,121	1,064	94.9
532	Non-investment transfers to municipal budgets		82,200	82,200	9,000	10.9
6	Capital expenses		86,420	86,420	66,648	77.1
61	Asset acquisitions and related expenses		86,420	86,420	66,648	77.1
	Total expenses:		252,420	252,420	154,755	61.3
	Transfers received		247,200	247,200	168,000	68.0
411	Non-investment transfers from the central budget		160,780	160,780	86,000	53.5
421	Investment transfers from the central budget		86,420	86,420	82,000	94.9
	Funding through chapter 322 of the MPO		5,220	5,220	4,710	90.2
	Total revenues:		252,420	252 420	172 710	68.4

Note: Items 411 and 421 consist of transfers from the Nuclear Account; CZK 4,710,250 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 radioactive 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 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 2014 were subjected to an external audit which was conducted by the auditing company DANĚ & AUDIT, registered in the list of auditors companies maintained by the Chamber of Auditors of the Czech Republic under registration number 504.

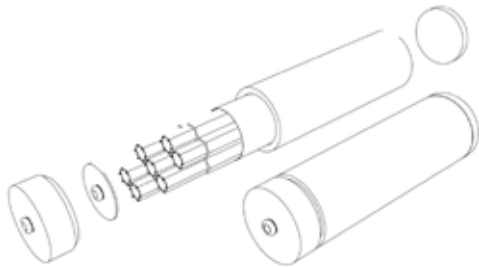
EVALUATION OF SÚRAO'S PERFORMANCE

SÚRAO met its responsibilities for the safe and reliable operation of Czech radioactive waste repositories during 2014 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, SÚRAO 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.

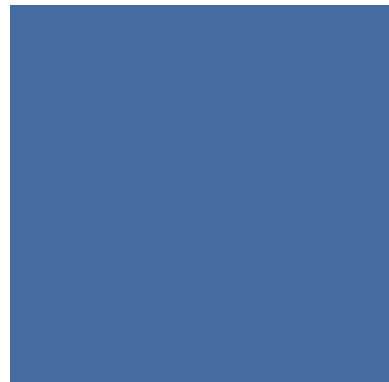
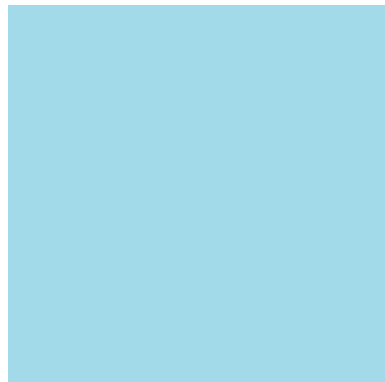
SÚRAO'S BOARD STATEMENT

SÚRAO's Board reviewed the SÚRAO Annual Report for 2014 at its 84th meeting on 20 March 2015 and recommended the Annual Report be submitted to the Ministry of Industry and Trade for subsequent consideration by the Government.

10000



The aim of the project is to develop a disposal container for spent nuclear fuel from Czech nuclear power stations. The materials used and the structural design must ensure the required level of safety under deep repository conditions for at least 10,000 years and, at the same time, fully satisfy criteria concerning operational and, primarily, long-term safety. The deep disposal of high-level radioactive waste project is based on the multi-barrier safety concept which considers the waste disposal container itself to be the most important engineered barrier.





BALANCE SHEET AS AT 31 DECEMBER 2014 (CZK THOUSAND)

	Current period			Previous period
	Gross	Correction	Net	
ASSETS	930,401	356,117	574 284	526 712
A. Fixed assets	895,090	356,117	538,972	509,796
I. Intangible fixed assets	465 731	224,707	241,024	230,823
II. Tangible fixed assets	429,358	131,410	297,948	278,973
III. Long-term financial assets	0	0	0	0
IV. Long-term receivables	0	0	0	0
B. Current assets	35,312	0	35,312	16,916
I. Stocks	1,033	0	1,033	812
II. Short-term receivables	1,477	0	1,477	1,821
III. Short-term financial assets	32,802	0	32,802	14,282
LIABILITIES			574,284	526,712
C. Equity capital			543,162	510,493
I. Owned capital and adjustments			639,545	572,897
II. Financial funds			4,600	4,049
III. Profit/Loss account			-131,287	-92,046
IV. Budget management income and expenditure account			30,304	25,594
D. Liabilities			31,122	16,218
I. Reserves			0	0
II. Long-term payables			0	0
III. Short-term payables			31,122	16,218

PROFIT AND LOSS ACCOUNT AS AT 31 DECEMBER 2014 (CZK THOUSAND)

Item No.	Item	Current period Main activity	Previous period Main activity
A.	Total expenses	146,175	140,723
I.	Expenses from activities	113,738	111,587
II.	Financial expenses	90	86
III.	Transfer expenses	32,347	29,050
IV.	Shared tax expenses	0	0
B.	Total revenues	106,934	103,276
I.	Revenues from activities	23,535	20,165
II.	Financial revenue	2	6
III.	Revenue from taxes and charges	0	0
IV.	Transfer revenue	83,396	83,105
V.	Revenue from shared taxes		
VI.	SURPLUS/DEFICIT		
1.	Surplus/deficit before tax	-39 241	-37 447
2.	Surplus/deficit after tax	-39 241	-37 447



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 2014, the cash flow statement as at 31 December 2014 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 compliance with International Financial Reporting Standards as adopted by the European Union 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, liabilities and financial situation of the Radioactive Waste Repository Authority with headquarters in Prague 1, Dlážděná 6, post code 110 00 as at 31 December 2014 as well as of costs, revenue and profit/loss, cash flows as at 31 December 2014 in compliance with International Financial Reporting Standards as adopted by the European Union.

Ivančice, 18 February 2015

Jiřina Závíšková, auditor, licence number 714

The Auditor's Report was verified by the auditing company DANĚ & AUDIT, Drůbežní trh 89/1, 664 91 Ivančice, registered in the list of auditors companies maintained by the Chamber of Auditors of the Czech Republic under registration number 504.

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 2014 SÚRAO'S BOARD CONSISTED OF THE FOLLOWING MEMBERS:

Mr. Pavel Gebauer (Chairman of the Board), Head of the Electrical Energy Department at the MPO;

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, CEO of ÚJV Řež;

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

SÚRAO's Board reviewed the SÚRAO Annual Report for 2014 at its 84th meeting on 20 March 2015 and recommended that the Annual Report be submitted to the Ministry of Industry and Trade.



CONTACTS

SÚRAO'S MANAGEMENT

Mr. Jiří Slovák

Managing Director

e-mail: slovak@surao.cz, tel.: +420 221 421 511

Mr. Vítězslav Duda

Senior Specialist for Economics, Deputy Managing Director

e-mail: duda@surao.cz, tel.: +420 221 421 526

Mr. Martin Březina

Senior Specialist for Repository Management and Operation

e-mail: brezina@surao.cz, tel.: +420 221 421 527

Ms. Soňa Konopásková

Senior Specialist for Safety and Licensing

e-mail: konopaskova@surao.cz, tel.: +420 221 421 518

Ms. Jaroslava Liehneová

Senior Specialist for Internal Audit and Human Resources

e-mail: liehneova@surao.cz, tel.: +420 221 421 533

Mr. Jakub Holeček

Senior Specialist for Information Technology

e-mail: holecek@surao.cz, tel.: +420 221 421 523

Ms. Tereza Bečvářiková

Senior Specialist for Communication and Public Relations

e-mail: becvarikova@surao.cz, tel.: +420 221 421 519

Mr. Radomír Šenkýř

Senior Specialist for Quality Management

e-mail: senkyr@surao.cz, tel.: +420 221 421 531

Mr. Jozef Harčarik

Mines Manager

e-mail: harcarik@surao.cz, tel.: +420 221 421 517

OTHER USEFUL CONTACTS:

Ivana Kédlová

Assistant to the Managing Director

e-mail: kedlova@surao.cz,

tel.: +420 221 421 511, fax: +420 221 421 544

Dukovany Repository

Mr. Jiří Dozbaba

Senior Specialist for Dukovany Repository Management and Operation

e-mail: dozbaba@surao.cz, tel. + fax: +420 561 103 423

Richard Repository

Mr. Pravoslav Smrž

Specialist for Richard and Bratrství Repositories Operation, Head of Department

e-mail: smrzh@surao.cz,

tel.: +420 416 724 456, fax: +420 416 724 458

Na Bídnici 2, 412 01 Litoměřice

tel.: +420 416 724 450, fax: +420 416 724 458

ABBREVIATIONS USED

CEG	Centre for Experimental Geotechnics
ČBÚ	Czech Mining Administration
ČVUT	Czech Technical University in Prague
DGR	deep geological repository
DOPAS	pan-European Full-scale Demonstration of Plugs and Seals Experiment
IAEA	International Atomic Energy Agency
MF	Ministry of Finance
MPO	Ministry of Industry and Trade
MŽP	Ministry of the Environment
NGOs	non-governmental organisations
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	Engeneering and Research Company
URL	Underground Research Laboratory
POSIVA	Finish company managing radioactive waste

Published by **SÚRAO** in 2015
Radioactive Waste Repository Authority
Dlážděná 6, 110 00 Praha 1
www.surao.cz
Design and production **CRS, a.s.**