

# **NATIONAL REPORT of THE CZECH REPUBLIC**

**under Article 9.1  
of the Council Directive 2009/71/EURATOM of 25 June  
2009**

**establishing a Community framework  
for the nuclear safety of nuclear instalations**

**JUNE 2014**



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## List of Abbreviations

<b>ASSET</b>	Assessment of Safety Significant Events Team
<b>Atomic Act</b>	Act No. 18/1997 Coll., on Peaceful Utilization of Nuclear Energy and Ionizing Radiation, as amended
<b>CV Řež</b>	Research Center Řež
<b>ČEZ, a. s.</b>	Business name of the Czech utility - joint stock company ČEZ, a. s.
<b>ČSKAE</b>	Czechoslovak Commission for Atomic Energy
<b>ČVUT</b>	Czech Technical University in Prague
<b>EC</b>	European Commission
<b>ENAC</b>	European Nuclear Assistance Consortium (8 Western European Nuclear Design and Engineering Companies)
<b>EOPs</b>	Emergency Operation Procedures
<b>EU</b>	European Union
<b>ETE</b>	Temelín NPP
<b>FDF</b>	Fuel Damage Frequency
<b>GMF</b>	Group of European Municipalities with Nuclear Facilities
<b>HPES</b>	Human Performance Evaluation System
<b>IAEA</b>	International Atomic Energy Agency
<b>ICRP</b>	International Commission for Radiation Protection
<b>INES</b>	International Nuclear Event Scale
<b>INPO</b>	Institute of Nuclear Power Operators
<b>INSAG</b>	International Nuclear Safety Advisory Group
<b>IPPAS</b>	International Physical Protection Advisory Service
<b>IPERS</b>	International Peer Review Service
<b>IRRT</b>	International Regulatory Review Team
<b>LBB</b>	Leak Before Break
<b>LTO</b>	Long Term Operation
<b>IAEA</b>	International Atomic Energy Agency
<b>MCR</b>	Main Control Room
<b>MSK-64</b>	Medvedev Sponheuer Karnik (seismic intensity scale)
<b>NUREG</b>	Nuclear Regulation
<b>OECD-NEA</b>	Nuclear Energy Agency within the Organization for Economic Cooperation and Development
<b>OSART</b>	Operational Safety Review Team
<b>PRIS</b>	Power Reactor Information System
<b>PSA</b>	Probabilistic Safety Assessment
<b>PSR</b>	Periodic Safety Review
<b>PWR</b>	Pressurized water reactor
<b>QARAT</b>	Quality Assurance Review Assistance Team
<b>SALTO</b>	Safe Long Term Operation
<b>SAMGs</b>	Severe Accident Management Guidelines
<b>SG</b>	Steam Generator
<b>SPSA</b>	Shutdown Probabilistic Safety Assessment
<b>SÚJB</b>	State Office for Nuclear Safety
<b>SÚJCHBO</b>	National Institute for Nuclear, Chemical and Biological Protection
<b>SÚRAO</b>	Radioactive Waste Repository Authority
<b>SÚRO</b>	National Radiation Protection Institute
<b>ÚJV Řež a. s./NRI</b>	Nuclear Research Institute in Řež, a.s.
<b>US NRC</b>	US Nuclear Regulatory Commission
<b>VVER</b>	Type identification for pressurized water reactors designed in the former Soviet Union
<b>WANO</b>	World Association of Nuclear Operators
<b>WENRA</b>	Western European Nuclear Regulators Association

# 1 Introduction

## 1.1 List of civilian nuclear installations

Nuclear installations as defined in Article 3(1) of the Directive operated in the Czech Republic:

Table 1

Site	Nuclear installation	No. of units	Type	Commissioning	Operator
Dukovany	NPP Dukovany	4	VVER 440/213	1985-1987	ČEZ
	Interim Spent Fuel Storage Facility Dukovany	1		1995	ČEZ
	Spent Fuel Storage Facility Dukovany	1		2006	ČEZ
	Radioactive Waste Disposal Facility Dukovany	1		1995	SÚRAO
Temelín	NPP Temelín	2	VVER 1000/320	2000-2004	ČEZ
	Spent Fuel Storage Facility Temelín	1		2010	ČEZ
Řež	Research Reactor in Řež	1	LVR 15	1972	CV Řež
	Research Reactor in Řež	1	LR-0	1995	CV Řež
	Spent fuel and high level waste storage facility Řež	1		1997	ÚJV Řež
CVUT Praha	Training Reactor Prague	1	VR-1	1992	ČVUT



## 1.2 Description of Nuclear Installations

### 1.2.1 Dukovany site

#### 1.2.1.1 *Dukovany NPP*

Dukovany Nuclear Power Plant (Dukovany NPP) operates four reactor units of VVER 440/213. The units were commissioned as follows:

Unit 1 - 1985

Unit 2 - 1986

Unit 3 - 1987

Unit 4 - 1987

After reconstruction which undergone in 2009-2012 electrical power of each unit at Dukovany NPP has reached 500 MW. In 2013, the installed power output of the power plant amounted to 2000 MW and represented nearly 10% of the total capacity installed within the power utility.

The spent fuel pool is located close to the reactor in the reactor building. More detailed description of NPP Dukovany units, including technical specifications of the plant, is provided in the National Report of the Czech Republic under the Convention on Nuclear Safety [1].

#### 1.2.1.2 *Interim Spent Fuel Storage Facility at Dukovany site*

Interim Spent Fuel Storage Facility in Dukovany (ISFSF Dukovany) is located on the NPP Dukovany site and operated by ČEZ, a.s. It is designed for a dry storage of SF using CASTOR-440/84 casks. ISFSF Dukovany forms an independently operated facility linked to existing engineering utility networks of NPP Dukovany. The total capacity of ISFSF Dukovany (60 casks) has been exhausted and the facility shut.

More detailed information about ISFSF, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2].

#### 1.2.1.3 *Spent Fuel Storage Facility at Dukovany site*

In 2008, a new spent fuel storage facility (SFSF Dukovany) was commissioned at Dukovany NPP site. It is used for dry storage of spent fuels (SF) using CASTOR-440/84M casks. Its storage capacity (1340 t of heavy metal in 133 casks) is sufficient to cover all the SF production of NPP Dukovany, after the existing storage capacity of ISFSF Dukovany was exhausted, with the anticipated operation of the units at least until 2035.

As of December 31, 2013 SFSF Dukovany contained 24 CASTOR-440/84M casks with the total number of FAs 2016.

More detailed information about SFSF, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2].

#### 1.2.1.4 *Radioactive Waste Repository Dukovany*

The Radioactive waste repository Dukovany (RWR) is used to dispose of low-level and intermediate waste from both the nuclear power plants in the Czech territory (NPP Dukovany and NPP Temelín), and limited amount of institutional RAW. The repository is operated by Správa úložišť radioaktivních odpadů – SÚRAO (RAWRA – Radioactive Waste Repository Agency) which is a state organisation ensuring the safe disposal of radioactive waste in the Czech Republic in compliance with the requirements of nuclear safety and human and environmental protection.

More detailed information about RWR, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2].

## **1.2.2 Temelín site**

### *1.2.2.1 Temelín NPP*

Temelín Nuclear Power Plant (Temelín NPP) operates two reactor units VVER 1000/320. Both units were commissioned in 2000 - 2004 with installed electrical power 1000 MW/unit. In 2013, the installed power output of the power plant amounted to 2120 MW.

The basic description of NPP Temelín units, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Convention on Nuclear Safety [1].

The spent fuel pool is located close to reactor in the reactor building. The radioactive waste is transported in transportation casks to the repository in Dukovany.

### *1.2.2.2 Spent Fuel Storage Facility Temelín*

The Spent Fuel Storage Facility Temelín (SFSF Temelín), located directly on the NPP Temelín site, is used for dry storage of spent fuel using CASTOR-1000/19 casks. The storage capacity of SFSF Temelín is sufficient to cover all SF production of NPP Temelín for 30 years of its operation. The storage capacity of SFSF Temelín is 1370 t of heavy metals in 152 casks. As of December 31, 2013 SFSF Temelín14 contained 24 CASTOR-440/84M casks with the total number of FAs 266. SFSF is operated by ČEZ, a.s.

More detailed information about SFSF, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2].

## **1.2.3 Řež site**

### *1.2.3.1 Research reactor LVR-15*

The research reactor LVR-15 (with the thermal power 10 MW) is situated in the location of ÚJV Řež near Prague (NRI – Nuclear research Institute Řež). During 1988 – 1989 the reactor underwent a radical reconstruction with the goal to upgrade a power and increase the safety. Test operations of the LVR-15 reactor commenced in 1989, and the reactor has been operating on full power (10 MW) since 1995.

The reactor LVR-15 serves for material study and production and development of nuclear radiopharmaceuticals. The research reactors are operated by Centrum výzkumu Řež (RCR - Research Centre Řež).

The RCR was founded on 9th October 2002 (as 100% daughter company of NRI) for the purposes of research and development and natural and technical sciences. The core activity of RCR Řež is the provision of an experimental base for research and development on the reactors LR-0 (see below) and LVR-15.

The basic description of the LVR-15 research reactor, including the technical specifications, is provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2] and on <http://www.cvrez.cz/en/infrastructure/research-reactor-lvr-15/>.

### *1.2.3.2 Research Reactor LR-0*

Around 1980, the reactor TR-0 (heavy water reactor with zero output) was completely rebuilt into reactor LR-0 – an experimental light water reactor with “zero” output. Since then, LR-0 has served

mainly for research of active zones, storage lattices and experimental modelling of VVER-1000 and VVER-440 type reactors. The reactor was put into permanent operation in June 1983.

The LR-0 reactor has been designed in a universal manner, suitable for physics experiments on VVER-type active zones with a wide range of cartridge quantities, fuel enrichment, along with various concentrations of H<sub>3</sub>BO<sub>3</sub> in the moderator and configurations of absorptive elements in the cartridges etc. A very important part of research is the modelling and experimental verification of radiation damage to materials used in internal reactor assemblies and VVER reactor vessels.

The design of the LR-0 reactor took into account specific requirements for both the reactor safety under all operational conditions, and of its purpose for physics research of VVER-type active zones.

The basic description of the LR-0 research reactor, including the technical specifications, is provided on RCR website <http://www.cvrez.cz/en/infrastructure/research-reactor-lr-0/> and in the National Report of the Czech Republic under the Joint Convention, Revision 1.1 of February 2003 and under the Convention on Nuclear Safety of September 2001.

#### *1.2.3.3 Storage Facility for Spent Fuel and High-Level Waste*

The storage facility is designed for the storage of SF and solid RAW produced in ÚJV Řež, a. s., and in RCR Řež. The facility was built in 1981 – 1988. Its trial operation started in 1995 and the facility has been in commercial operation since 1997. The structural details of the original HLW storage facility are provided in the National Report of the Czech Republic under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [2]. The repository is operated by NRI Řež.

### **1.2.4 Training Reactor ČVUT, Praha**

#### *1.2.4.1 Training Reactor*

The Training reactor VR-1 is a pool type reactor, with a nominal power of 1 kW and for short period up to 5 kW. It was designed and constructed in the late 1980s, and has been in operation in the Czech Republic since 1990. The reactor is operated by the Department of Nuclear Reactors of the Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague. It is a key facility for education and training of students in nuclear engineering, reactor and neutron physics, safety studies of nuclear installations, nuclear fuel cycle, and fuel management. The reactor offers more than 25 experiments for undergraduate and graduate students as well as for training of NPP and research reactors operators.

The basic description of the VR-1 units, including the technical specifications of the plant, is provided in the National Report of the Czech Republic under the Convention on Nuclear Safety [1] and on website: [http://reactorvr1.eu/index\\_e.php](http://reactorvr1.eu/index_e.php)

### **1.2.5 National policy and strategy**

Government established a national policy and strategy for safety that is clearly manifested primarily in the pertinent legislation, however, it is not formally documented. In the Czech Republic's administrative system such highly political documents are usually formally issued only when the existing context requires so, e.g. when multiple factors and „actors“ are involved on both sides. This is not the case of nuclear safety and radiation protection regulation where only one state administration body, the SÚJB, has comprehensive powers and responsibilities.

## 2 ARTICLE 4 - Legislative, regulatory and organisational framework

### 2.1 ARTICLE 4.1

#### 2.1.1 National legislative, regulatory and organisational framework

##### 2.1.1.1 Legislative framework

###### *Atomic Act*

The main legislative act in the area of nuclear safety is the Atomic Act (Act No. 18/1997 Coll., on Peaceful Utilisation of Nuclear Energy and Ionising Radiation, as amended). This Act was published in the Collection of Laws on 24 January 1997 and entered into force on 1 July 1997.

The Atomic Act entrusts the executive (state administration) and regulatory (supervision) powers in the area of peaceful utilisation of nuclear energy and ionising radiation to The State Office for Nuclear Safety (SÚJB).

The scope of the Atomic Act is defined as follows (Article 1 of the Atomic Act):

This Act regulates:

- the method of utilising nuclear energy and ionising radiation, and conditions for the performance of practices related to nuclear energy utilisation and radiation activities;
- the system for protection of people and the environment from undesirable effects of ionising radiation;
- obligations during preparation for and implementation of intervention intended to reduce exposures to natural sources and exposures due to radiation accidents;
- specific requirements for civil liability in the case of nuclear damage;
- conditions for safe management of radioactive waste;
- performance of State administration and supervision within nuclear energy utilisation, within radiation activities and over nuclear items.

*A new Atomic Act and its implementing provisions are currently being prepared. This preparation is not primarily driven by the need to set completely new legal framework, but rather to supplement, specify and extend the existing legal regulations on the basis of experience obtained from seventeen-year application of the current Atomic Act.*

###### *Implementing regulations to the Atomic Act*

The Atomic Act authorizes the SÚJB, and in strictly defined cases other bodies of the state administration, to issue implementing decrees. Some implementing provisions were adopted also in the form of Government Regulations.

Listing of relevant implementing acts:

- SÚJB Decree No. 144/1997 Coll., on physical protection of nuclear materials and nuclear facilities and their classification, as amended
- SÚJB Decree No. 146/1997 Coll., specifying activities directly affecting nuclear safety and activities especially important from radiation protection viewpoint, requirements on qualification and professional training, on method to be used for verification of special professional competency and for issue authorizations to selected personnel, and the form of documentation to be approved for the licensing of expert training of selected personnel, as amended
- SÚJB Decree No. 215/1997 Coll., on criteria for siting nuclear installations and very significant ionizing radiation sources,

- SÚJB Decree No. 106/1998 Coll., on nuclear safety and radiation protection assurance during commissioning and operation of nuclear facilities,
- Government Regulation No. 11/1999 Coll., on emergency planning zone,
- SÚJB Decree No. 195/1999 Coll., on basic design criteria for nuclear installations with respect to nuclear safety, radiation protection and emergency preparedness,
- SÚJB Decree No. 307/2002 Coll., on radiation protection, as amended,
- SÚJB Decree No. 317/2002 Coll., on type-approval of packagings for shipment, storage and disposal of nuclear materials and radioactive substances, on type-approval of ionizing radiation sources and shipment of nuclear material and specified radioactive substances (on type-approval and shipment), as amended
- SÚJB Decree No. 318/2002 Coll., on details of emergency preparedness of nuclear installations and workplaces with ionizing radiation sources and on requirements on the content of on-site emergency plan and emergency rule, as amended
- SÚJB Decree No. 319/2002 Coll., on performance and management of the national radiation monitoring network, as amended
- SÚJB Decree No. 360/2002 Coll., establishing a method to create a financial reserve for decommissioning of nuclear installations or workplaces in categories III or IV,
- SÚJB Decree No. 419/2002 Coll., on personal radiation passes,
- SÚJB Decree No. 185/2003 Coll., on decommissioning of nuclear installation or workplaces of category III or IV,
- SÚJB Decree No. 193/2005 Coll., sets the list of theoretical and practical areas forming the education and preparation content required in the Czech Republic for the performance of regulated activities belonging to the competence of SÚJB,
- SÚJB Decree No. 309/2005 Coll., on assurance of technical safety of selected equipment,
- SÚJB Decree No. 132/2008 Coll., on Quality Assurance System in carrying out activities connected with utilization of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard to their assignment to classes of nuclear safety,
- SÚJB Decree No. 165/2009 Coll., establishing a list of Trigger list items,
- SÚJB Decree No. 213/2010 Coll., on accounting for and control of nuclear material and on reporting of data required by EC regulations,
- Government Regulation No. 399/2011 Coll., on fees for professional activities of the State Office for Nuclear Safety.

The legislative framework is completed with non-legislative recommendations and guides published by the SÚJB in a special non-periodic series of publications: "Safety of Nuclear Installations - Requirements and Guides".

*Other important legislative acts relevant in the area of nuclear safety*

- Act No. 100/2001 Coll., on Environmental impact assessment, as amended
  - regulates the assessment of impacts of projects (construction works, activities and technologies) and conceptions (strategies, policies, plans or programmes) specified in the Act on the environment and on public health. It also regulates the roles and procedures of natural and legal persons, administrative authorities and territorial self-governing units in this assessment.
- Act No. 183/2006 Coll., on town and country planning and building code, as amended (Building Code)
  - regulates the objectives and tasks of town and country planning, the system of authorities of town and country planning, the town and country planning instruments, the assessment of the impacts on area sustainable development, decision-making within the area, possibilities of consolidation of procedures pursuant to this Act with procedures of the environmental impact

assessment, conditions for construction, land development and for preparation of the public infrastructure, records of planning activity and qualification requirements for planning activity.

- Act No. 500/2004 Coll., Administrative Procedure Code, as amended
  - regulates the procedure of administrative authorities when performing administrative procedures. This Act is applied as *lex generalis* (Atomic Act contains some specific administrative provisions which take precedence over Administrative Procedure Code) to the Atomic Act when the SÚJB performs its executive powers, i. e. issues licences etc.
- Act No. 255/2012 Coll., on inspection (Inspection Code)
  - regulates the procedure of inspection authorities when performing the inspections activities (controls how the inspected parties fulfil the obligations specified in legal acts and provisions based on those legal acts).
- Act No. 634/2004 Coll., on Administrative Fees, as amended
  - specifies administrative fees and the execution of their administration, especially their assessment and collection, carried out by administrative authorities.
- Act No. 106/1999 Coll., on free access to information, as amended
  - sets the rules for the provision of information and further regulates the terms of the right to a free access to information. The SÚJB is bound according to this Act to provide information related to its competencies.
- Act No. 2/1969 Coll., on establishment of Ministries and other bodies of central government of the Czech Republic, as amended
  - Article 2 para 1 point 7 stipulates that the SÚJB is the Central Government Body, is headed by the SÚJB Chairman who is appointed by the Government of the Czech Republic.
- Act No. 218/2000 Coll., on Budgetary Rules, as amended
  - defines, inter alia, the function and the process of creation of the state budget, its revenues and expenditures. The concrete state budget for each year is stipulated in a separate Act. The SÚJB has within the state budget its own chapter.
- Act No. 159/2006 Coll., on Conflict of Interests, as amended
  - defines, inter alia, the obligation of public officials to carry out their service in a way preventing any conflict between their private interests and the interests they are obligated to defend or protect in connection with their assignment, the limitations applicable to selected activities of public officials and the incompatibility of the office of a public official with other assignments. The public officials for the purposes of this Act are defined in Article 2, chairman of the SÚJB falls under Article 2 para 1 letter c).
- Act No. 239/2000 Coll., on Integrated Rescue System, as amended
- Act No. 240/2000 Coll., on Crisis Management, as amended
  - the latter two Acts define competencies and duties of individual subjects integrated in the rescue system and the principles of crisis management.

#### *Relevant international treaties and other legal instruments*

International treaties constitute an important part of the Czech legal framework. As regards their legal status, Article 10 of the Constitution stipulates, that promulgated international treaties, the ratification of which has been approved by the Parliament and which are binding on the Czech Republic, constitute a part of the legal order.

The Czech Republic is a contracting party of relevant international treaties and conventions that establish the common obligations and mechanisms for ensuring safety in the utilization of nuclear energy and ionizing radiation for peaceful purposes, and that provide for an effective coordinated international response to a nuclear or radiological emergency.

The international treaties signed by the Czech Republic (or the former Czechoslovak Socialist Republic and later the Czech and Slovak Federal Republic) are, in the area of competence of the SÚJB, listed on its website in the department “International cooperation” . In this regard it is necessary to mention at least the Convention on Nuclear Safety.

#### *Bilateral agreements on co-operation in nuclear safety*

Czech Republic has concluded international agreements (on governmental level) on co-operation, or exchange of information, including crisis information, in the area of nuclear safety with all its neighboring countries (Austria, Poland, Germany, Slovakia) as well as with the following countries: Australia, Bulgaria, India, Canada, Korea, Hungary, Russian Federation, Ukraine and USA.

#### *Bilateral arrangements between regulators*

The SÚJB has concluded arrangements (on the level of regulatory authorities) on co-operation or exchange of information, including crisis information, in the area of nuclear safety with the regulatory bodies of the following countries: Finland, France, Canada, Korea, Hungary, Germany, Romania, Russian Federation, Slovakia, Spain, Great Britain, Ukraine and USA. In some cases, these arrangements focus on a very narrow area.

#### *Regular bilateral co-operation*

Most of bilateral agreements and arrangements provide a legal base for the co-operation, which has an occasional character. Regular consultations about safety of nuclear installations take place with the following states: Hungary, Germany, Poland, Austria, Slovakia and Slovenia.

#### *2.1.1.2 Organisational framework*

The main ministries and other bodies of state administration with competencies related to the area of nuclear safety are:

- SÚJB, which is the Central Governmental Body entrusted with the executive and regulatory powers in the area of peaceful utilisation of nuclear energy and ionising radiation.
- Government, which among others appoints (and removes) the Chairman of the SÚJB. It plays an important coordination role in the crisis management (together with ministries and other central administrative authorities, regional bodies and other authorities with jurisdiction in the region, the municipal authorities with extended powers and municipality authorities).
- Ministry of Industry and Trade, which is, according to the Building Act, entrusted with the power to issue permits for certain types of nuclear installations (Article 16 para 2 letter d).
- Ministry for Regional Development, which is, according to the Building Act, entrusted with the power to issue permits for certain types of nuclear installations (Article 13 para 2 of the Building Act).
- Ministry of Interior, which is, among others, responsible for the interior order and security, fire protection and other issues covered by the emergency acts.
- Ministry of Environment, which is, among others, responsible for the environmental impact assessment proceedings.
- Ministry of Labour and Social Affairs, which is responsible, inter alia, for the occupational health and safety.
- Ministry of Health, which creates a system of special medical care provided by selected clinics to persons irradiated during radiation incidents.

- Ministry of Finance, which is the administrator of the nuclear account (used for financing of activities related to safe disposal of radioactive waste).
- SÚRAO (Radioactive Waste Repository Authority), which is a state organisation (established by the Ministry of Industry and Trade – based on the Article 26 of the Atomic Act) entrusted with the task of ensuring safe disposal of radioactive waste in the Czech Republic in compliance with the requirements of nuclear safety and human and environmental protection.

### 2.1.1.3 Regulatory Framework

The legislative provisions governing regulatory framework in inspections matters are mainly the Atomic Act (Articles 39 to 42), the Inspection Code and the Administrative Code.

The SÚJB performs the checks of compliance with the Atomic Act and its implementing provisions. SÚJB staffs responsible for inspections are inspectors (inspectors must fulfil stipulated requirements – Article 39 para 2 of the Atomic Act).

In case of violation of the legal provisions, the SÚJB is authorized, inter alia, to issue provisional measures, to prohibit certain activities/behaviour, to oblige the inspected person to suffer the imposition of management by another person, to impose a penalty etc. The penalties are not enforced by the Office itself, customs authorities are entrusted with the power to enforce them.

The results of the inspections are contained in the Inspection reports. The inspected party may file objections against the inspection findings. The inspected party may also use ordinary and extraordinary remedies against the decisions issued by the SÚJB. The obliged party has also right – under specified conditions – to appeal to an administrative court (and in strictly defined cases to the Constitution court).

## 2.2 Article 4.1 (a)

The nuclear safety requirements are incorporated in the Czech Republic in the Atomic Act, SÚJB Decrees, and Government Regulations and in non-binding Recommendations and Guides published by the SÚJB.

Constitution of the Czech Republic stipulates in Article 15 that the legislative power is in the Czech Republic vested to the Parliament. Article 41 of the Constitution enumerates subjects empowered to submit draft laws to the Parliament (a Deputy, a group of Deputies, the Senate, the Government, or the representative body of a superior self-governing territorial unit).

The process of preparation and adoption of legislative acts (laws, decrees, government regulations etc.) is, at the governmental level, regulated by the Government Legislative Rules (approved by the Governmental Resolution No. 188/1998 Coll., as amended).

### *Laws*

According to the abovementioned Rules the ministries and central governmental bodies prepares, in their area of responsibility, firstly a document called “factual objectives of the law”, where the aim and impacts of the respective law are described, and if approved, the laws themselves.

The SÚJB, as a central governmental body, prepares a draft of laws in its field of competence and submits it to the intra-governmental consultations where all ministries, central governmental bodies, the Government Office and other relevant subjects are represented. Once the final text of the draft is agreed between all interested parties and approved by the Government, it is submitted for the approval firstly to the Parliament (firstly to the Chamber of Deputies, secondly to the Senate) and secondly to the President of the Czech Republic. As soon as the law is signed by the Chairman of the Chamber of Deputies, the President of the Republic and the Prime Minister it is published in the Collection of Laws. On the day of its publication it becomes a valid part of the Czech legal order (laws



enter into force (take effect) either on a day stipulated in the law itself or 15 days after the day of publication in the Collection of Laws).

#### *Decrees, Government Regulations*

The provisions of laws may be further specified via implementing regulations – decrees and government regulations. The Government does not need to be empowered to issue implementing regulations by the laws themselves, its power to adopt Government Regulations is derived directly from the Constitution. The SÚJB, however, needs such enabling provisions in order to be authorized to issue implementing decrees.

The Atomic Act authorizes the SÚJB, and in strictly defined cases other bodies of the state administration, to issue implementing decrees to further specify the provisions of the Atomic Act. SÚJB Decrees are prepared by the SÚJB and are submitted to the intra-governmental consultations. Once the text is agreed, it is signed by the Chairman of the SÚJB and published in the Collection of Laws

The Government Regulations in the area of nuclear safety are also prepared by the SÚJB and submitted to the intra-governmental consultations. Once all the objections raised are satisfactorily settled, the final text is approved by the Government, signed by the Prime Minister and published in the Collection of Laws.

Legal effects of the publication of decrees and government regulations in the Collection of Laws and the rules for their entry into force are the same as the ones described above.

*Guides and Recommendations* related to the area of nuclear safety and radiation protection are not legally binding but their observance helps stakeholders to implement the legislative requirements into practice. They are prepared and published (on the SÚJB website and some of them also in a paper form) in order to help the addressees of the legal provisions to comply with the legislation and to reach a “good practice”.

## **2.3 Article 4.1 (b)**

### **2.3.1 Legal provisions to prevent the operation of nuclear installation without a valid license**

According to the Article 9 para 1 of the Atomic Act the following activities can be performed only after receiving a license:

- Siting of a nuclear installation or radioactive waste repository,
- Construction of a nuclear installation or category IV workplace,
- Particular stages, laid down in an implementing legal regulation, of nuclear installation commissioning,
- Operation of a nuclear installation or category III or IV workplace,
- Restart of a nuclear reactor to criticality following a fuel reload,
- Reconstruction or other changes affecting nuclear safety, radiation protection, physical protection and emergency preparedness of a nuclear installation or category III or IV workplace,
- Particular stages of decommissioning of a nuclear installation or category III or IV workplace to the extent and in the manner established in an implementing legal regulation.

As stated in Article 3 para 2 letter c) of the Atomic Act the SÚJB is the competent authority authorized to issue licenses to perform those activities.

The Atomic Act explicitly forbids launching siting, construction, operation and other activities at nuclear installations, requiring the licence issued by the SÚJB, before the respective licence becomes legally effective (Article 10 para 4 of the Atomic Act contains a provision prohibiting the activities for which a license is required to be performed until the decision of the SÚJB enters into force).

Article 41 of the Atomic Act provides for a penalty for breaching the legal obligation to perform the abovementioned activities only after receiving the necessary license. In those cases the SÚJB is entitled to impose penalties up to 50 million CZK.

## **2.3.2 A description of the licensing process and system**

### *2.3.2.1 General description*

The Atomic Act requires (Art. 10 to 12) the applicant to have a legal capacity to act, to be of a good reputation and professionally competent. Only those applicants are entitled after complying with other legal obligations to receive a license to perform activities mentioned above.

Art. 4 and 13 define the obligations which the applicant and its application must fulfil in order to be considered by the SÚJB. The applicant must, among others, submit safety demonstration to the SÚJB for review and assessment. The Atomic Act in its Appendix provides for a documentation which must be submitted for review and assessment to the SÚJB together with the application.

In the administrative proceedings leading to the issuance of a license, the SÚJB proceeds independently of the proceedings of any other administrative body. The decision which grants the applicant the license to perform the activities in the area of nuclear safety is taken only after establishing that the applicant fulfils all the obligations stipulated in the Atomic Act as well as in the relevant implementing regulations.

#### *Appeal procedure, judicial protection*

The applicant may challenge the SÚJB decision according to the appeal procedures described in the Administrative Procedure Code. He may also apply for judicial protection providing the conditions of the Act No. 150/2002 Coll., Code of Administrative Justice are fulfilled.

### *2.3.2.2 Specific description*

The main stages of the licensing process of NPPs are as follows: the licensing of the site, construction, commissioning, trial operation, commercial operation and decommissioning.

Prior to the site license proceedings according to the Atomic Act the environmental impact assessment process (according to the Act No. 100/2001 Coll.) must be completed by the Ministry of Environment. The licensing of the site is primarily focused on assessment and evaluation of site characteristics and site compliance with the criteria set up in SÚJB Decree 215/1997. The Decree contains both exclusion criteria (e.g. seismicity of the site) which prevent the issuance of a positive license as well as conditioning criteria which allow proceeding when defined conditions are fulfilled. However this process also includes preliminary assessment and evaluation of the design concept of the planned NPP and preliminary concepts of the radiation protection (radiation protection of workers at the NPP, public and environment), waste and spent fuel management, decommissioning, physical protection and emergency planning. Information and data relevant to NPP siting and safety demonstration and justification are submitted by the applicant to the SÚJB for evaluation in a form of the Initial Safety Analysis Report. The site licensing also includes the SÚJB evaluation and approval of the quality assurance and quality management system of the applicant that is relevant to the siting process.

The licensing of the NPP construction is focused on design evaluation; specifically on whether there is enough evidence that the proposed design meets all requirements for nuclear safety, radiation protection and emergency preparedness as set up by SÚJB Decree 195/1999 Coll., on design requirements for nuclear facilities and SÚJB Decree 307/2002 Coll., on radiation protection. The design evaluation includes transients and accidents analyses too. Construction licensing process also includes independent evaluation of radioactive waste and spent nuclear fuel generation and management, radiation protection (SÚJB Decree 307/2002 Coll., on radiation protection"), physical protection (SÚJB Decree 144/1997 Coll., on physical protection) and evaluation of the concept of NPP

decommissioning (SÚJB Decree 185/2003 Coll., on decommissioning). Information and data relevant to NPP construction and safety demonstration and justification are submitted by the applicant to the SÚJB for evaluation in the form of the Preliminary Safety Analysis Report. In addition the construction licensing process includes the SÚJB evaluation of the readiness of the applicant and its suppliers for construction activities and also evaluation and approval of the quality assurance and quality management system of the applicant and its main suppliers relevant to construction of the NPP.

The licensing of the NPP commissioning and operation is focused on evaluation of the readiness of the NPP and the personnel for tests performed before the first nuclear fuel loading into reactor, for the fuel loading into reactor, for the tests carried out with the nuclear fuel in the reactor and for the trial and commercial operation. The SÚJB evaluation of the relevance and completeness of the tests and the SÚJB independent assessment of safety is carried out based on reviewing the updated Safety Analysis Report and test documentation. Evaluation of the on-site and off-site emergency preparedness and plans is part of the commissioning authorization process and changes influencing the off-site emergency plan may only be performed subject to an agreement with the relevant District Authority. The final license for operation is granted for an unlimited period of time. To ensure that the applicant keeps state of nuclear safety of operated nuclear facility as high as possible the SÚJB license includes requirements for comprehensive periodic safety review every ten years.

For decommissioning purposes the holder of the operational license is obligated to create continually a provision so that monetary funds deposited on a nuclear account are available for the preparation and process of decommissioning at the required time and in the amounts in agreement with the decommissioning proposal verified by SÚRAO and approved by the SÚJB.

For all others nuclear facilities defined by Atomic Act all the life cycle stages requirements and proceeding mentioned above are identical as for NPPs utilizing graded approach i.e. evaluation is scaled to risks posed by research facility. Also all experiments and possible modifications are assessed, evaluated and approved by the same procedures as for NPP, only the scope of proofs is appropriate to the type of the nuclear installation to be assessed according to graded approach.

The SÚJB is the respective authority protecting the public interest pursuant to special act (as stated in Article 4 para 2 of the Building Code). The building authorities (which are for the nuclear installations Ministry of Industry and Trade and Ministry for Regional Development) thus need to proceed in mutual cooperation with the SÚJB when granting permits for nuclear installations according to Building Code. None of the permits according to the Building Code can be issued without the authorization from the SÚJB.

## **2.4 Article 4.1 (c)**

### **2.4.1 Nuclear safety supervision**

According to the Article 3 para 2 of the Atomic Act the SÚJB is responsible for carrying out state supervision of nuclear safety, nuclear items, physical protection, radiation protection, emergency preparedness and technical safety of classified equipment and for inspecting the adherence to the fulfilment of the obligations arising from the Atomic Act.

#### *2.4.1.1 Assessment*

The assessment is an important part of the SÚJB supervisory activity. The SÚJB assesses the level of nuclear safety in the course administrative procedures to issue licences for activities identified in the Atomic Act. Nuclear and radiation safety requirements are defined individually for every activity subject to a licence in the Atomic Act and in relevant SÚJB Decrees. Fulfilment of them is to be proved in the documentation which is to be submitted by the licensee.

Moreover, the SÚJB assesses the level of nuclear safety assurance within the following activities:

- assessment of the periodically submitted Final Safety Analysis Report,

- evaluation of the in-service inspections program,
- evaluation of the program for the enhancement of nuclear installation safety,
- evaluation of feedback from the operational experience and implementation of the latest scientific knowledge and technology.

In agreement with the Atomic Act, all results obtained by the SÚJB in the area of nuclear safety verification and assessment are submitted to the government on an annual basis. The results are also made available to the general public.

The main tool for the evaluation of nuclear safety is the Periodic Safety Review. It is based on submitted documentation, mainly updated Safety Report. It takes place in both NPPs with the periodicity of 10 years and is performed fully according to technical IAEA requirements and guides.

#### 2.4.1.2 Inspections

The verifications are carried out in the form of inspections performed by SÚJB inspectors. The legislative framework governing the performance of inspections is formed mainly by Articles 17, 39 and 40 of the Atomic Act, the Inspection Code and the Administrative Code. Those Acts regulate the process of inspections, lay down rights and obligations of inspectors and inspected parties during the performance of inspection activities. Inspections cover all areas of the SÚJB scope of competence, in the area of nuclear safety inspectors check mainly whether subjects that obtained a licence in accordance with Article 9, paragraph 1 observe the requirements of the Atomic Act, relevant implementing regulations, and whether they comply with the conditions specified in the license.

Article 39 of the Atomic Act defines the subject matter of the inspections, stipulates that the inspection activities are carried out by SÚJB inspectors and defines requirements which need to be fulfilled by a person in order to become an inspector (inter alia inspectors need to be university educated, have three years of professional experience in the field and pass internal examinations). Article 40 establishes the authority of the inspectors to require that remedial measures are adopted within established deadlines, impose corrective measures, inspections, tests and reviews etc.

Articles 39 and 40 are *lex specialis* towards the general legal act governing the inspection activities - the Inspection Code. Rules laid down in the Inspection Code for commencement of the inspections, collecting samples, access to lands, buildings and other premises, inspections' report and objections against them, inspectors' and inspected parties' rights and duties etc. are applicable also for inspections performed by SÚJB inspectors.

There are different forms of inspection activities performed by the SÚJB:

- routine inspections and planned specialized inspections (those are inspections anticipated in an internal SÚJB document called the "Plan of the inspection activities", which is prepared for a calendar year),
- inspections responding to a particular situation (so-called "ad-hoc" inspections).

The routine inspections should cover all regular important activities performed by the licensee, especially the compliance with the Limits and Conditions for safe operation (which is a document approved by the SÚJB according to Art. 15 para 2 of the Atomic Act). The plan for routine inspections is developed based on the plans for operation, requirements of Limits and Conditions and requirements in the operating procedures; the inspections are performed on daily, weekly and quarterly bases. Results of the routine inspections are usually evaluated once a month. The evaluation activity is documented in monthly reports and discussed with the licensee.

In the case of the planned specialized inspections, a regular semi-annual plan is developed based on:

- evaluated results of the inspections performed during a previous period;
- plan of the nuclear installation operation;
- evaluation and conclusions of routine inspections;
- conclusions of SÚJB assessment effort;

- independent analyses, findings from safety analyses.

The inspections are usually carried out by a team of inspectors made up of resident inspectors and inspectors from SÚJB Central Office. The so-called "ad-hoc" inspections are performed to examine events and failures with an impact on nuclear safety, as well as to clarify serious findings from the routine or planned inspections.

The SÚJB also performs inspections focused on activities of licensee suppliers of services, products and their management system.

## **2.4.2 Bodies relevant when implementing the elements of the system of nuclear safety supervision**

### *2.4.2.1 Regulatory authority*

Roles and Responsibilities of the SÚJB are described above.

### *2.4.2.2 TSO*

The SÚJB utilizes the support of organizations in its branch. These are e.g. the State Institute for Radiation Protection (SÚRO), which is a public research institution providing professional and technical support for the SÚJB in the field of radiation protection, and the public research institution in the National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO), providing primarily professional and technical support for the SÚJB.

Concerning direct external support outside its branch, the SÚJB co-operates with a number of technical organizations. Very intensive technical support is provided especially by the Research Centre Rez, s.r.o. (TSO Section for the SÚJB support). This support especially concerns the expert evaluation of the safety analyses submitted to the SÚJB by the license holder of Dukovany NPP and Temelín NPP in the safety analysis reports. Close cooperation is also in the area of site evaluation with the Institute of Geology of the Academy of Science of the Czech Republic.

### *2.4.2.3 Other organizations*

It is the license holder who is primarily responsible for the nuclear safety. In this regard it is expected that the licence holder ensures regular inspections during installation, commissioning and operation stages of the nuclear installation by an accredited inspection team as well as audits of license holder's contractors (including designers and manufacturers) and internal organizational audits. In addition design, manufacturing and selected installations of classified equipment specially designed according to SÚJB Decree No.309/2005, Coll., on assurance of technical safety of selected equipment need to be inspected by an independent inspection organizations.

## **2.5 Article 4.1 (d)**

In case of deficiencies identified during the inspection activities the SÚJB is entitled (as stated in Article 40) to require the inspected person to remedy the situation, within a set period of time; to require the inspected person to perform technical inspections, reviews or testing of operating condition of the installations, their parts, system or their assemblies and further to monitor and implement remedial actions for reducing or mitigating adverse effects; to withdraw the special professional competence authorisation issued to an employee of the inspected person, in the event of a serious violation of his obligations or his not fulfilling requirements of professional competence and physical and mental capability.

The SÚJB response to identified deficiencies is supposed to correspond to the seriousness of a situation. All findings of non-compliances have to be precisely described in the inspection report. Inspectors may solve minor deficiencies within the course of the inspections themselves, more

significant findings need to be corrected by the inspected party within specified period of time and the inspected person is obliged to notify the measures undertaken to the SÚJB.

When further enforcement actions are needed the SÚJB proceeds in accordance with the Administrative Procedure Code (Article 61 - the institute of provisional measures - or Article 150 – issuance of Order when the factual findings are sufficient - may be applied) and issues a decision imposing a penalty for a breach of the identified obligation. Article 41 of the Atomic Act specifies the obligations the breach of which may lead to penalties specified therein (the amount of the penalty is supposed to reflect the seriousness, significance and time period of the illegal activity and the extent of consequences that were caused, as well as early and efficient co-operation in removing the deficiencies). The penalties are not enforced by the SÚJB itself. It is the customs authorities that are authorized to enforce them.

Moreover, Article 16 para 4 of the Atomic Act stipulates that the SÚJB may restrict or suspend performance of the licensed activities in case of violation of obligations stipulated in the Atomic Act or in case of breach of conditions laid down in the licence. And Article 16 para 5 empowers the SÚJB to withdraw the licence if the licensee ceases to fulfil the obligations on which the licence is based, does not fulfil his obligations as established in the Atomic Act or does not remove, within a specified period of time, deficiencies identified by the SÚJB.

Any decision issued by the SÚJB may be challenged according to an „appeal procedure“. The “appeal procedure” for the decisions issued by the central government authority is regulated by the Article 152 of the Administrative Procedure Code. The appeal decision is taken by the Chairman of the SÚJB based on the draft decision presented to him by an “appeal committee” (where majority of members are specialists not employed by the SÚJB). The obliged party may also apply for judicial protection (after exhausting ordinary remedies) according to the Act No. 150/2002 Coll., Code of Administrative Justice (Article 65 stipulates that anyone who claims that their rights have been prejudiced directly or due to the violation of their rights in the preceding proceedings by an act of an administrative authority whereby the person’s rights or obligations are created, changed, nullified or bindingly determined may seek the cancellation of such a decision, or the declaration of its nullity, unless otherwise provided). In the utmost case, it is possible to require protection by presenting a constitutional complaint to the Constitutional Court.

## **2.6 Article 4.2**

### **2.6.1 Arrangements ensuring that national framework is maintained and improved**

#### *2.6.1.1 Sources for improvements (úroveň 4)*

##### *Activities performed by the licensees*

According to the provisions of Article 17 of the Atomic Act, the licensee is obliged to verify nuclear safety during all stages of the installation's lifecycle (in the scope appropriate to a particular licence), assess it in a systematic and comprehensive manner from the aspect of the current level of science and technology, and ensure that results of such assessments are translated into practical measures. The verification/assessment must be documented. The content of the documentation is specified in the Appendix to the Atomic Act. Safety assessment is, in compliance with the Atomic Act, reviewed by the SÚJB, both analytically and within its inspection activities.

The operating experience feed-back mechanism is regulated by SÚJB Decree No. 106/1998 Coll., on nuclear safety and radiation protection assurance during commissioning and operation of nuclear facilities and in one of SÚJB Safety Guides (Safety Guide 1. 1 Operating experience feed-back mechanism at the NPPs).

### *International Peer Review*

Outputs from the international peer review program of the IAEA, OECD-NEA and WANO carried out by both the license holders and regulatory body serve as important sources for enhancing nuclear safety.

#### *IAEA*

The Czech Republic regularly invites international missions of the IAEA. In the case of NPP these are the following types of missions: OSART, ASSET, SALTO, IPERS, Safety Issues, IPPAS, Site SR Design, LBB assessment, Fire Safety, PSA and Seismic SBSA.

Dukovany NPP has hosted in total 14, Temelín NPP 24 and ČEZ Company 1 IAEA mission.

The IAEA conducted the Integrated Regulatory Review Service (IRRS) mission to review the regulatory framework for nuclear and radiation safety in the Czech Republic at the request of the Czech Government from 18 to 29 November 2013. The IRRS team confirmed that

- the Czech regulatory system for nuclear and radiation safety is robust;
- the SÚJB is an effective and independent regulatory authority;
- the Czech Republic actively participates in the global safety regime.

For more information including recommendations, suggestions and good practices identified during the mission please refer to the full version of the Report [5] at:

[http://www.SÚJB.cz/fileadmin/SÚJB/docs/zpravy/IRRS\\_Czech\\_Republic\\_Final\\_Report.pdf](http://www.SÚJB.cz/fileadmin/SÚJB/docs/zpravy/IRRS_Czech_Republic_Final_Report.pdf)

#### *WANO*

ČEZ, a. s., as an active member of WANO, regularly invites the international program of partner inspections (WANO Peer Review - WPR). These inspections are performed by international expert teams from various professional organizations and nuclear power plants operated in other countries and cover 10 standard areas (Organisational Effectiveness, Operations, Maintenance, Engineering, Operating Experience, Radiological Protection, Chemistry, Training, Fire Protection, Emergency Preparedness). The program of partner inspections supposes one WPR in 4 years at each NPP and after two years a subsequent or other independent inspection.

ČEZ employees also participate in this program in international teams visiting other NPPs. Such participation contributes to the transfer of know-how, safety benchmarking and the enhancement of the safety level in the world.

The first WANO Peer Review at Dukovany NPP took place in 1997, the second WPR mission in 2007, with the follow up mission in January 2009. The third WPR mission took place in 2012. The missions confirmed a high level of safety of operation of Dukovany NPP. The follow-up inspections confirmed that all recommendations for improvements had been implemented or were in a high stage of completion.

The first WANO Peer Review at Temelín NPP took place in 2004 with a follow-up mission in 2006. The second WPR mission at Temelín NPP took place in 2011 with a follow-up mission in 2013. In the Temelín NPP, WPR appreciated the high professionalism of the staff and the achieved safety level of the power plant.

The next WANO Peer Review is planned in Dukovany NPP for the autumn 2014 (follow-up mission), and in the Temelín NPP for 2015.

#### *EU Stress Tests*

Stress Tests under the initiative of the European Commission in response to the Fukushima nuclear power plant accident were executed at both nuclear power plants – Temelín NPP and Dukovany NPP in 2011. The NPP evaluation was focused on extreme natural events seriously endangering safety functions and leading to severe accidents. The Stress Tests identified organizational and technical

measures for further improvement of resistance of both power plants against extreme external interference. Such potential measures are currently further analysed in terms of efficiency. As a result of the conclusions of the Stress Tests, the national action plan for improving nuclear safety of nuclear installations in the Czech Republic was completed on 31 December 2012. Any measures of a technical nature modifying existing power plant designs need to be further analysed as regards their feasibility. Based on their results specific actions should be proposed. Those need to be approved by the SÚJB before their implementation. Details of the "stress tests" analysis are given in [4] and [6].

#### *International recommendations and technical standards*

An important source of the recommendations are publications of the IAEA, in particular the Safety Series: TECDOCs, Safety Fundamentals, Safety Requirements, Safety Guides, INSAG reports including information data bases, e.g. AIRS - Advanced Incident Reporting system database, OSMIR – OSART Mission Results databases, etc.

Another external source of information is WANO, providing a number of products, contributing to the increase of the safety and effectiveness of NPP operation: Guidelines, Performance Objectives and Criteria, Just-in-Time, lessons learned from events (Significant Event Reports/Significant Operating Experience Reports), methodology of Self-Assessment, Excellence in Human Performance, Operating Decision Making (ODM), Hot Topics, etc.

The SÚJB evaluates Final Reports from PSRs of the individual units, issues positions on the PSR findings and on the list and completeness of corrective measures and, periodically, at the end of each year of operation, reviews the fulfillment of the schedule and content of the corrective measures. It also discusses with the Licensee any potential changes in the schedule for the performance of corrective measures and approves adopted technical and administrative measures.

#### *International operating experience feedback*

The sources used by the SÚJB for collecting information on operating and regulatory experience are IAEA IRS and INES reports, WGOE (OEDC/NEA), EU Clearinghouse on NPP operating experience, IAEA publications, Convention reports, information given at international seminars and conferences. A group of inspectors have been assigned to analyse the information from the different sources. The SÚJB has its own database in which national events are recorded, and provides Czech input to the international IAEA/NEA incident reporting system (IRS).

NPPs in the Czech Republic are involved in the international system of sharing operational experience (IAEA, WANO). In parallel with this, they are orientated on and have direct contacts first of all with identical types of nuclear power plants in Slovakia, Hungary, Finland, Ukraine and Russia. Besides this, the ČEZ, a.s. experts participate in the work of working groups of other professional organizations, such as e.g. EUR, ENISS, ENC, FORATOM, Eurelectric, WNA, EPRI etc.

The main task of this co-operation is the transfer and utilization of operational experience and technical information of nuclear power plant operators in practice of both NPPs in the Czech Republic. Selected important information about events at other nuclear facilities and international experience from sources like WANO, IAEA, event. INPO, etc., are monitored and included into the program of the Event Committee, meetings of the Production division director, meetings of NPP Dukovany and Temelín management (and subsequently departments), Committee for Safety of the Production Division, and Committee for Safety of NPP Dukovany and Temelín.

The most important experience with a possible impact on the operation or safety of the nuclear power plants is implemented in the form of corrective measures. These focus first of all on the training of personnel, maintenance and improving inspection activities. All the acquired information on external events is stored in the database supported by special software, and these are utilized by the specialists of individual departments as technical support in dealing with problems. The staff concerned is directly informed of the most important events on the foreign power plants on the training days. The tasks and measures resulting from these events are implemented and their



effectiveness is evaluated. Safety events and operational experience from non-nuclear operations of ČEZ, a. s., are transmitted at NPPs Dukovany and Temelín in a standard working way of communication inside ČEZ, a. s.

Vice versa, the operational experience of Dukovany and Temelín NPPs is handed over to other NPP operators either by direct contact or by elaborating 4 to 6 detailed reports annually on the most important events with analyses of their root causes. These reports are then included into the international WANO network, or they are submitted to the SÚJB for distribution via the Incident Reporting System (IRS) network of the IAEA.

#### *2.6.1.2 Improvements of the legislative framework*

Based on all those sources mentioned above, improvements are made also in the legislative sphere. The current Atomic Act and its implementing regulations have been amended several times in order to incorporate all the necessary changes (improvements). For the moment a new Atomic Act and its implementing regulations are under preparation in order to supplement, specify and extend the existing legal regulations on the basis of experience obtained from seventeen-year application of the current Atomic Act.

## **3 Article 5 - Competent regulatory authority**

### **3.1 Article 5.1**

#### **3.1.1 Legal foundations of the regulatory authority**

The SÚJB was established through the Act No. 21/1993 Coll., amending the Act No. 2/1969 Coll. (Competence Act), as a central governmental body of the Czech Republic. In agreement therewith after the dissolution of the Czech and Slovak Federal Republic, the SÚJB assumed power and competency of the former ČSKAE (Czechoslovak Atomic Energy Commission) in respect to the state supervision of nuclear safety and nuclear materials.

The Czech Parliament extended the SÚJB competence to include issues of protection against ionizing radiation in July 1995. As a result, Czech Regulatory bodies in charge of nuclear safety and radiation protection have merged and the SÚJB has become an integrated state regulatory body which carries out the state supervision for the whole area of the utilization of nuclear energy and ionizing radiation.

#### **3.1.2 The regulatory authority and its responsibilities**

Article 3 of the Atomic Act provides following competences of the SÚJB:

- to carry out State supervision of nuclear safety, nuclear items, physical protection, radiation protection, emergency preparedness and technical safety of selected equipment and to inspect the adherence to the fulfillment of the obligations arising out of the Atomic Act;
- to monitor non-proliferation of nuclear weapons and carry out state supervision of nuclear items and physical protection of nuclear materials and nuclear installations;
- to issue licences to perform practices governed by the Atomic Act and to issue type-approvals for packaging assemblies for transport and storage of nuclear materials and radioactive substances given in an implementing legal regulation, ionizing radiation sources and other products;
- to issue authorizations for activities performed by selected personnel;
- to approve documentation, programs, lists, limits, conditions, methods of physical protection assurance, emergency rules and, subject to discussion with the relevant Regional Authorities and

relevant Municipal Authorities of Municipalities with extended competence of compatibility with off-site emergency plans, on-site emergency plans and their modifications;

- to establish for example conditions, requirements, limits, maximum permitted levels, guidance levels, dose constraint, reference levels, exemption levels and clearance levels;
- to establish the emergency planning zone and, if applicable, its further structuring, and to approve delineation of the controlled area;
- in accordance with an implementing legal regulation, to establish requirements on emergency preparedness of licensees, and to inspect their fulfillment;
- to monitor and assess the exposure status and regulate exposure of individuals;
- to provide information to municipalities and Regional Authorities concerning radioactive waste management within their territory of administration;
- to control the activity of the National Radiation Monitoring Network, the functions and organization of which shall be set out in an implementing legal regulation, to provide for the functioning of its headquarter, and to provide for the activities of an Emergency Response Centre and for an international exchange of information on the radiation situation;
- to establish State and Professional examination commissions for verification of special professional competence of selected personnel, and to issue statutes for these commissions and specify activities directly affecting nuclear safety and activities especially important from the radiation protection viewpoint;
- to maintain a State system of accounting for and control of nuclear materials and data and information in accordance with international agreements binding on the Czech Republic, and to set out requirements for accounting methods and inspection thereof in an implementing legal regulation;
- to maintain a national system for registration of licensees, registrants, imported and exported selected items, ionizing radiation sources, and a record of exposure of individuals;
- to ensure, by means of the National Radiation Monitoring Network and based on assessment of a radiation situation, the availability of background information necessary to take decisions aimed at reducing or averting exposure in the case of a radiation accident;
- to approve a classification of nuclear installation or its components and nuclear materials into appropriate categories, from the physical protection viewpoint;
- to ensure international co-operation within its sphere of competence and, in particular, to be an intermediary of technical co-operation with the International Atomic Energy Agency, and within its sphere of competence to communicate information to the European Commission or, if applicable, to other bodies of the European Union;
- to decide on assurance of handling nuclear items, ionizing radiation sources or radioactive wastes have been treated inconsistently with rules of law, or where the detrimental condition is not being removed;
- to give out information according to special legal provisions and once a year to publish a report on its activities and submit it to the Government and to the public;
- to establish technical requirements to assure technical safety of selected systems, structures and components.

The SÚJB as the central governmental body is authorized to issue implementing regulations to the Atomic Act.

## **3.2 Article 5.2**

### **3.2.1 The position of the regulatory authority in the MS organisational structure and functional separation**

The SÚJB is an independent central governmental body directed by a chairperson. The statute of the SÚJB within the state administration structure is shown in figure bellow. Within its powers and

competencies, the SÚJB is responsible only to the Government of the Czech Republic. The SÚJB chairperson is appointed by the Government and is responsible for the execution of all the SÚJB duties stipulated by the Atomic Act directly to the Prime Minister. The SÚJB has its own chapter within the state budget.

### **3.2.2 The regulatory decision making process**

The independence of the SÚJB as regards the regulatory decision making process is guaranteed by the Article 14 of the Atomic Act where it is stipulated that the SÚJB proceeds in administrative proceedings independently from any other administrative bodies. Moreover Article 14 says that the criterion for the SÚJB as regards decision granting a license is the verification that the applicant complies with all the applicable requirements of the Atomic Act and its implementing regulations.

#### *3.2.2.1 The reporting arrangements of the regulatory authority*

As stated above, the SÚJB is responsible only to the Government. Thus the only obligation on reporting concerns the Government. Article 3 para 2 letter v) of the atomic Act prescribes that the SÚJB is, once a year, obliged to prepare a report on its activities, publish it and submit it to the Government. More information about the content of this report can be found in Chapter 6 of the report.

## **3.3 Article 5.3**

### **3.3.1 The legal powers**

As regards the SÚJB legal powers, they are in detail indicated in the Chapter 3.1. above - The regulatory authority and its responsibilities.

For the inspections carried by the SÚJB - rights and obligations of the inspectors are stipulated in the Atomic Act, Article 39 and mainly in the Inspection Code.

SÚJB inspectors are authorized to access in the course of inspections buildings, land and other premises, which are owned or used by the inspected party or are otherwise directly related to the performance and subject of inspection. They may require evidence of fulfilment of all obligations for the provision of nuclear safety, radiation protection, physical protection and emergency preparedness of nuclear installations etc. Among others they may conduct the required measuring, tests and collect samples at the premises of inspected persons which are necessary for checking the compliance with the legal requirements. They may create image or audio recordings and they may request further cooperation required to perform inspection from the inspected party.

### **3.3.2 Regulatory authority - the availability of qualified human resources**

The number of staff at the SÚJB in 2013 was 201. Approx. 2/3 of the positions comprise nuclear safety and radiation protection inspectors. Distribution of staff to different organizational units at the SÚJB reflects the nature and safety significance of regulated activities. Most of the professional staff of the SÚJB hence work on regulatory functions related to the nuclear safety and radiation protection. The number of people in nuclear safety section has increased over the past five years. The SÚJB trains its personnel continuously. Training programmes are established on organizational as well as on individual level reflecting the tasks and responsibilities of the individual. Individual needs for training are identified in the course of work and in keeping with internal regulation VDS 039/2001 (rev. 3/2012) - System of the preparation, education and evaluation of SÚJB employees. For more details see Chapter 5.2. In addition to competence and resources of SÚJB's own staff, the SÚJB uses technical organizations as well as other consultants to support regulatory activities. As the SÚJB is the

final decision-maker in the regulated area, SÚJB's internal expertise has to be adequately strong to arrive at proper regulatory decisions.

The organizational structure of the SÚJB consists of 3 departments headed by deputies and 6 special units:

- the Nuclear Safety Department, which includes the Nuclear Safety Assessment, the Nuclear Installation Inspection Section, New Reactors Licensing Department and the Spent Fuel and Radwaste Management Unit;
- the Radiation Protection Department, which includes the Exposure Regulation Section the Radioactive Sources Section and the Radiation Protection of Fuel Cycle Section the Management and Technical Support Department, which includes the International Cooperation Section, Financial Section and Non-Proliferation Supervision Section
- the Emergency Response Centre;
- the EU Cooperation Division;
- the Internal audit and Financial Supervision;
- the Director for Security Affairs;
- the Advisory Board of the SÚJB Chairperson;
- the Secretariat of the SÚJB Chairperson.

The detail organizational structure of the SÚJB is shown in figures bellow.

SÚJB staffs responsible for the inspections are inspectors of nuclear safety and inspectors of radiation protection. The inspectors are appointed by the chairperson of the SÚJB. They work at SÚJB Headquarters and directly at the sites of Dukovany and Temelín nuclear power plants, as well as in the Regional Centers (see figure bellow).

All SÚJB inspectors are university graduates; the majority are graduates of technical university. Some of the inspectors have experience from industry, nuclear research or NPP. The SÚJB created a system of continuing education for its staff.

Advisory groups made up of independent experts have been used since 1998 to provide expert support to the SÚJB in respect to nuclear safety and radiation protection.

In the current conditions of the Czech Republic, material and human resources are sufficient for fulfilment of the basic functions imposed by the Atomic Act.

### **3.3.3 The arrangements in place for the regulatory authority to meet its financial needs**

The SÚJB management is responsible for ensuring adequate resources for all regulatory activities (regulatory control of safety and security of NPPs, emergency preparedness, radioactive waste management and use of radiation and safeguards).

The SÚJB as a central governmental body has its own Chapter within Act on State Budget that is finally approved by the Parliament. Adequate resources needed for the SÚJB operation are therefore ensured through standard state budget planning procedures required for all parts of the Government (ministries, central offices). It is mainly three year mid-term work/financial plan that serves as vehicle in this process.

Subsequently in detailed annual SÚJB budget and associated plans/programs both financial and (subsequently) human resources are allocated to different areas of regulatory activities as well as to administration and to development activities. These plans are discussed first in different levels of management meetings and finally approved at SÚJB management meeting and signed by the SÚJB Chairperson.

Approximately, 60% of SÚJB budget Chapter comes from fees paid by the licence holders. This model of financing ensures that any State Budget decreases in resources allocated for state administration have a minimal effect on regulatory oversight.

The expertise fee paid by applicant is required for the application for:

- a licence for siting of a nuclear installation,
- a licence for the construction of a nuclear installation, or category IV workplace having unsealed ionizing radiation sources,
- the first licence for the operation of a nuclear installation, category III workplace comprising mining and processing of uranium ore, or category IV workplace having unsealed ionizing radiation sources, or
- a licence for individual stages of decommissioning of a nuclear installation, or category III workplace comprising mining and processing of uranium ore, or category IV workplace having unsealed ionizing radiation sources,
- type approval,
- transport of radioactive materials,
- personal radiation card.

The licence holder is obliged to pay also the maintenance fee for the activities of the SÚJB relating to the performance of the state supervision over license holder's activities as regards licences for the operation of nuclear installation and for their decommissioning.

In the current conditions of the Czech Republic, financial resources are sufficient for fulfilment of the basic functions imposed by the Atomic Act.

### **3.4 Article 5.3 (a)**

#### **3.4.1 The legal provisions to require the licence holder to comply with nuclear safety requirements and the terms of the relevant licence**

The main competency given to the SÚJB is to issue licenses to perform activities governed by the Atomic Act. The SÚJB decides on granting a license after having verified that the applicant has fulfilled all the conditions established in the Atomic Act and in implementing regulations. This is realized through assessment of documentation required to be attached to a license application separately for activities mentioned in Article 9 of the atomic Act. The documents related to the individual license are listed in the Appendix to the Atomic Act.

The essential document to demonstrate the compliance with legal requirements for nuclear installation design is the Safety Analysis Report (SAR). There exist three types of SAR:

- Initial Safety Analysis Report (for siting licence)
- Preliminary Safety Analysis Report (for construction licence)
- Preoperational (Final) Safety Analysis Report (for commissioning and operation licences).

The SÚJB approves documentation, programs, lists, limits, conditions, methods of physical protection assurance, emergency rules. A licensee is obliged to submit to the SÚJB for approval:

- Quality assurance programs;
- List of classified equipment;
- Limits and conditions for safe operation of the nuclear installation;
- Program of operational inspections;
- Program of radiation monitoring
- Methods of physical protection maintenance;
- Commissioning and decommissioning programs and non-standard programs or tests affecting nuclear safety as specified in the licence;

- Transport, storage, loading and reloading of nuclear fuel and related activities programs as specified in the licence;
  - List of important working activities impacting on nuclear safety, competence requirements, professional training and method of its verification;
  - Assignment of nuclear installations and nuclear materials to categories appropriate from the aspect of physical protection;
  - On-site emergency plan and the emergency rules;
  - proposal for designation of an emergency planning zone and for delineation of a controlled area.
- Any changes to the documentation specified above must be approved by the SÚJB in the same administrative procedure.

The SÚJB is authorized to require additional documentation that demonstrates compliance with the national nuclear safety requirements in the decision-making process.

#### 3.4.1.1 *Examples*

A SÚJB decision on a license includes conditions on which the activity can be realized together with the time period for which the license is issued. Observance of the specified conditions is obligatory.

Among other such conditions/requirements:

- Annual general updating of SAR (maintain living SAR) summarizing all project changes performed up to the end of the calendar year or extended to SAR if necessary. The new extended content of Initial SAR for siting of new reactors was set in 2010;
- Periodic Safety Review (PSR) execution in a ten-year period as an implementation of international practices required by the SÚJB. The content of PSR is described in a regulatory guide published on its website;
- Probabilistic Safety Assessment (PSA) results shall be annually reported to the SÚJB and “Living PSA study” should be maintained by the licensee and all modifications shall be included;
- Summary information on safety-related events and safety performance indicators;
- Updating of Severe Accident Management Guides including guides for control room activity and technical support centre;
- Ageing assessment of systems and components regarding time of operation;
- Assessment of reliability of electrical components and I&C components;
- Specific testing programs shall be approved by the SÚJB, e.g. commissioning stage programs, fuel reloading program, testing operation program, etc.;
- Measurement of fuel assemblies or any other specified component or system.

### **3.5 Article 5.3 (b)**

#### **3.5.1 The legal provisions demanding the licence holders to demonstrate meeting of the nuclear safety requirements under paras 2 to 5 of Article 6**

##### *3.5.1.1 General Obligations of licence holders supervised by the SÚJB*

Licence holders are obliged i.e. to:

- ensure nuclear safety (whereas the responsibility for nuclear safety of a nuclear installation cannot be delegated to another person), radiation protection, physical protection and emergency preparedness, including its verification, in the scope appropriate to the particular licence;
- assess in a systematic and comprehensive manner the fulfilment of conditions from the aspect of the current level of science and technology, and ensure that the assessment results are put into practice;
- comply with the conditions of the decision issued by the Office, proceed in accordance with approved documentation and investigate, without delay, any breach of such conditions or procedures and take remedial measures and measures to prevent repetition of such situations.

Any case when exposure limits or limits for safe operation of a nuclear installation have been exceeded or violated must be reported to the Office without delay;

- comply with technical and organizational conditions for safe operation of nuclear installations, ionizing radiation sources and workplaces with ionizing radiation source as laid down in an implementing regulations, comply with the approved quality assurance program and adhere to specific requirements for uniformity and correctness of measurements and measuring devices to the extent laid down in an implementing regulation;
- entrust performance of the specified activities only to such persons who fulfill conditions of special professional competence and are physically and mentally sound, and entrust performance of the sensitive activity under Article 2a of the Atomic Act only to such persons who is eligible in terms of security in accordance with a specific legal regulation;
- report to the SÚJB without delay any change or event impacting on nuclear safety, radiation protection, physical protection, nuclear materials management or emergency preparedness, and changes in any circumstances on which issue of the licence was based;
- inform without any delay the SÚJB about an initiation of the insolvency proceedings;
- ensure technical safety of the operated classified equipment in accordance with an implementing legal regulation.

Without a previous licence provided by the SÚJB, no installation modifications, nor other technical or organizational changes with an impact on nuclear safety, radiation protection, physical protection or emergency preparedness may be performed.

## **3.6 Article 5.3 (c)**

### **3.6.1 The legal arrangements for verification of compliance**

Execution of the state supervision of peaceful utilization of nuclear energy and ionizing radiation is governed by Chapter 6 of the Atomic Act, which includes in Article 39 Inspection activities:

The SÚJB carries out inspections at the premises of persons granted a licence under Article 9 para 1, or registered under Article 21 para 2, at the premises of persons performing activities related to nuclear energy utilization and radiation activities not requiring either a licence or a registration, at the premises of persons responsible for preparation or implementation of remedial actions to reduce exposure to natural radioactive sources or exposure due to radiation incidents, and at the premises of persons where there is a reason to believe that they utilize nuclear energy or perform radiation activities without authorization, and at the premises of persons who are justifiably suspicious that they breach of obligations from international treaties binding on the Czech Republic, and at premises of manufacturers and suppliers of building materials and water.

SÚJB inspectors shall be authorized, depending on the nature of the identified shortcoming, to require the inspected person to remedy the situation within a set period of time, charge the inspected person to perform technical inspections, reviews or testing of function condition of the installation, its parts, systems or its assemblies, if necessary for verification of nuclear safety, propose a penalization.

Inspectors shall check whether the licence holders are observing provisions of the Atomic Act and implementing regulations, and whether they are observing the subject and scope of the issued licence, including specified conditions.

Within the inspection activities, the inspectors and also the Chairperson of the SÚJB are particularly authorized to:

- check on the compliance with requirements and conditions of nuclear safety, radiation protection, physical protection and emergency preparedness and inspect the nuclear installation conditions, adherence to the limits and conditions and operational procedures,

- demand evidence of fulfilment of all set obligations for the provision of nuclear safety, radiation protection, physical protection and emergency preparedness of a nuclear installation and to perform measurements and collect samples at the premises of inspected persons, such as are necessary for checking the compliance with the Atomic Act and other regulations issues on its basis,
- verify professional competence and special professional competence under the Atomic Act,
- participate in investigations of events with an impact on nuclear safety, radiation protection, physical protection and emergency preparedness, including unauthorized handling of nuclear items or ionizing radiation sources.

#### 3.6.1.1 Examples

The SÚJB inspection annual plan is prepared in compliance with the internal directive “Inspections planning, performance and evaluation at nuclear installations” and covers inspection areas specified in IAEA GS-G-1.3. Inspections are focused not only on the technical aspects of operation including the professional competence of control room operators, but also on the integrated management system and its exercise.

The inspection procedures for repeated inspections are implemented in detailed inspection procedures for supervising activities related to system operation. The special inspection is performed using an individual one-time procedure that shall be approved by responsible manager.

Routine inspection performed by resident/site inspectors is focused on operation, technical specification and the observance of operational procedures and safety culture. The data on safety culture is presently collected, assessed and the results are used in inspection planning.

The resident inspector can be also present in internal discussions of a committee for events assessment established by the licensee. The results and conclusion of this committee are included in the Inspection Protocol.

The SÚJB has established the categorization of findings arising from the regulatory review and assessment. Findings and resolutions are communicated to licensee by formal letters or by way of meetings without delay and in accordance with terms stipulated by law:

- The finding is without influence to safe operation of the plant. Documentation can be approved, and permission or authorization can be issued.
- The finding is without influence to safe operation of the plant. Documentation can be approved conditionally.
- The documentation cannot be approved. Neither permission nor authorization can be issued.

All findings shall be resolved to the grade A or B - “without influence to safe operation of the plant”. All formal deficiencies of documentation have to be corrected in limited time period.

As regards the enforcement actions they are described in Chapter 2.5.

## 3.7 Article 5.3 (d)

### 3.7.1 A description of the legal arrangements in place for the regulatory authority to ensure the enforcement proces

Legal arrangements and processess are described in Chapter 2.5.

#### 3.7.1.1 Examples

Every inspection is concluded with a final report and an assessment sheet; the final report serves to present the inspection results (findings) to the operator, while the assessment sheet serve to classify findings and inspectors have an opportunity to present proposals for improvements in further inspection, assessment, and regulatory activities of the SÚJB. Almost every month, a internal meeting

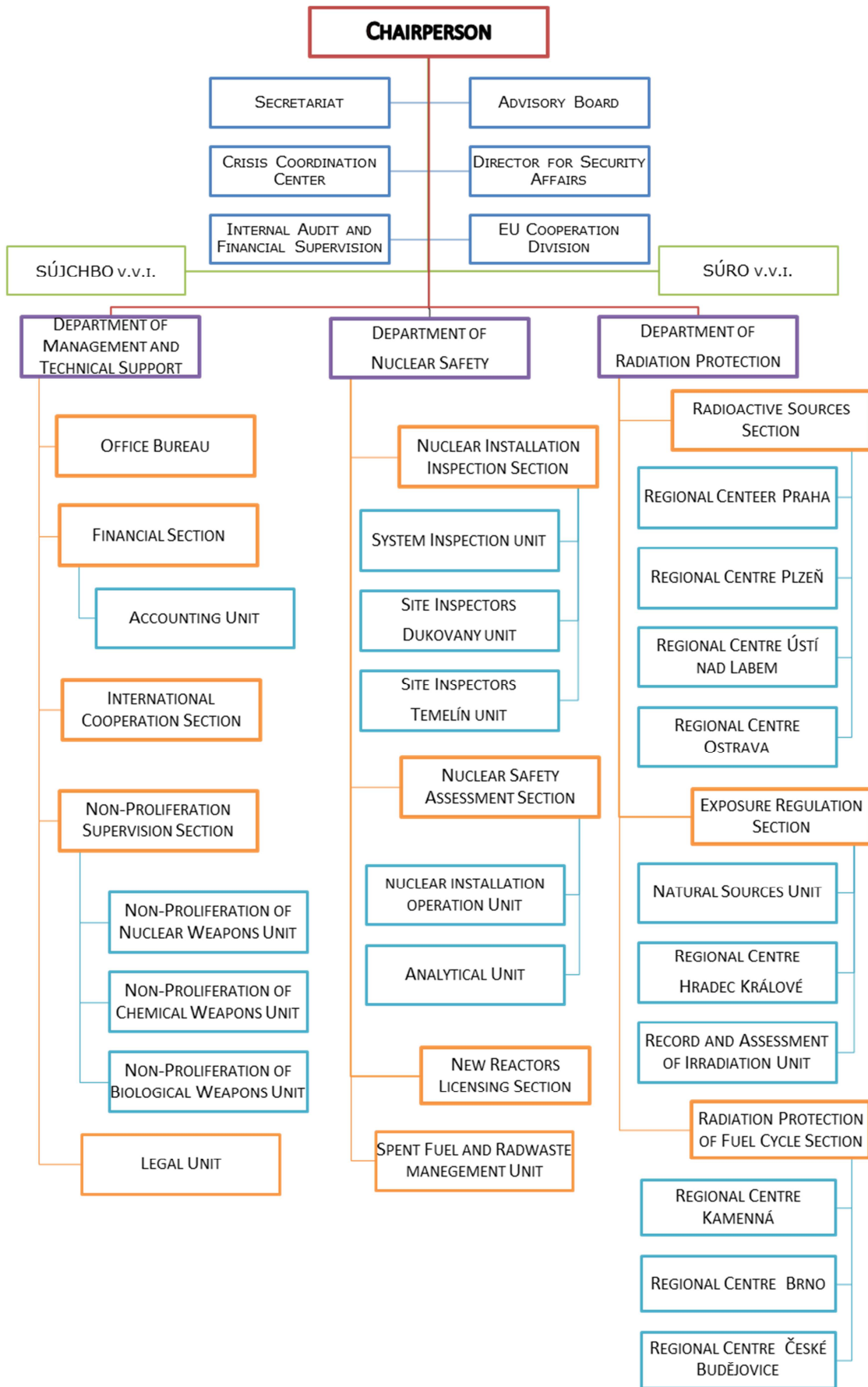


at which inspections for the past month are evaluated and results are discussed and, if applicable, further steps are proposed.

The information about implementation of remedial measures is provided by the licence holder to the SÚJB in the form of letter or record in daily on-site logs. The SÚJB evaluates the content of information and if the nature of finding demands, the effect of implementation of the measures is verified at the NPP. The compliance with requirements stipulated in reports is tracked by the Inspection Assessment Commission.

Position of the State Office for Nuclear Safety in the State Administration and its Structure





## **4 ARTICLE 6**

### **4.1 ARTICLE 6.1**

#### **4.1.1 National legislative, regulatory and organisational framework**

The responsibility for nuclear safety rests with licensees (as laid down in Art. 17 para 1 letter a) of the Atomic Act) throughout the lifecycle of facilities and the duration of activities. Accordingly, it is licensees' obligation to assure safe use of ionising radiation and nuclear energy. It is licensees' obligation to assure such physical protection and emergency planning and other arrangements, necessary to ensure limitation of radiation and nuclear damage, as required by the Atomic Act and specified in implementing decrees. It is the responsibility of the regulatory body (SÚJB) to verify that the licensees fulfil the legal requirements.

General obligations of licensees and further obligations relating to nuclear safety, radiation protection, physical protection and emergency preparedness are specified particularly in Art. 17 and Art. 18 of the Atomic Act.

### **4.2 Article 6.2**

#### **4.2.1 National legislative, regulatory and organisational framework**

Pursuant to the provisions of Art. 17 of the Atomic Act, the license holder shall verify nuclear safety during all stages of the lifetime of the installation (in the scope appropriate for the particular licences), he shall assess it in a systematic and comprehensive manner from the aspect of the current level of science and technology, and he shall ensure that the results of such assessments are transformed into practical measures. The verification/assessment shall be documented.

The content of the documentation is specified in the Appendix to the Atomic Act. The safety assessment is, in compliance with the Atomic Act, reviewed by the SÚJB, both analytically and as part of its inspection activities.

Implementing decrees to the Atomic Act set out basic criteria for the assessment of a nuclear installation during different stages of its service life.

The list of relevant decrees is provided in Annex 1 of this Report.

#### **4.2.2 Examples of actual practice for systematic assessment**

ČEZ a.s., a holder of the licence for the operation of the Dukovany and Temelín, the SURAO, the Research Centre (CV) Rez and the Nuclear Research Institute (UJV) Rez, a.s. bear the primary responsibility for nuclear safety and radiation protection of their nuclear installations and storages. The arrangements for nuclear safety, radiation protection and emergency preparedness have the highest priority of the licence holder. The entire management system serves for maintaining the desired level of safety that includes the essential elements of safety management and operational feedback used for verification of the level of safety.

The licence holder has established his own management system, used for implementation of the requirements of the Atomic Act. In accordance with the Quality Assurance Program including elaborated duties and responsibilities established in other licence holder documents, the control of ensured compliance with approved working procedures and deadlines of periodic tests are ensured. In case of events with an impact on nuclear safety and radiation protection, in accordance with the established system the registration and investigation of the event and then determining of corrective actions to prevent recurrence of the event is initiated in accordance with the established system. This

entire process is programmatically and systematically evaluated and monitored by inspectors of state supervision.

#### **4.2.3 Example of actual practice for periodic safety review**

At the Dukovany and Temelín NPPs the comprehensive assessment of a safety level are executed regularly in ten-year intervals, as globally established by the Periodic Safety Review (PSR). These reviews are executed fully in compliance with the requirements of IAEA instruction NS-G-2.10. PSR evaluates fourteen areas (Power Plant Design, Actual Status of Systems, Structures and Components, Equipment qualification for ambient conditions, Ageing of safety important structures, systems and components, Deterministic Safety Analysis, Probabilistic Safety Assessment, Potential of Internal and External Risks, Operational Safety, Feedback from operation of other nuclear installations, and science and research results, Organization and Control, Quality Systems and Safety Culture, Procedures and Regulations, Human Factor, Emergency Preparedness, Radiological Environmental Impact).

The results of the evaluation are stated in final Periodic Safety Reports of all evaluated areas and in a summary report that was, along with the list of strengths, corrective measures and time schedule of their performance, transmitted to the SÚJB. The results of PSR provided, among others, the basis for preparation of the renewal of operational licences of the units of Dukovany NPP and Temelín NPP after completion of the previous ten years of operation.

##### *Overview of completed/prepared PSRs:*

Last PSR of Dukovany NPP was executed in the years 2005 and 2006. The PSR of Temelín NPP after 10 years of operation was executed in the years 2008 - 2010. A comprehensive evaluation under PSR identified appropriate opportunities to improve the safety. The major part of corresponding corrective measures is in the phase of implementation or preparation for implementation, and would be implemented even regardless of subsequent evaluation within the Stress Tests. The completed PSR envisages implementation of approved measures for Dukovany NPP Unit 1 by 2015, for Temelín NPP by 2018.

The SÚJB evaluates the Final Reports of the PSR of individual units, issues its positions to the PSR findings and to the list and adequacy of corrective measures and periodically on the finalization of each individual year of operation, and checks the compliance with the time schedule and content of the corrective measures. Any changes in the time schedule for implementation of the corrective measures are evaluated and discussed with the licence holder and the adopted technical and administrative measures are approved.

#### **4.2.4 Example of actual practice for continuous improvement of nuclear safety**

At the Dukovany and Temelín NPPs, the operational feedback system permitting to benefit from their own operating experience and experience from foreign nuclear power plants is applied. Both NPPs regularly obtain information about events from the IRS (Incident Reporting System) and WANO networks and from operators in Slovakia (the same type of reactors).

The entire process, which includes an examination of the operational event causes, remedial measures identification and feedback of experience from these events, is ensured by specific departments in the relevant NPP, and is described in relevant controlling documentation of individual NPPs.

Documentation includes methods for gathering information on operational events, their registration, investigation procedures, and analyses of their causes, establishment and adoption of remedial measures for these events, monitoring their implementation and evaluation of operational events feedback effectiveness and trends. Besides it also includes obligation and procedure for the transfer

of NPP's own experience to other NPP operators and for the dissemination of foreign and its own operational experience within the plant.

The events are evaluated according to the INES international scale. A head of the Feedback section is responsible for the event-related investigation. This section coordinates the whole process of events investigation in the power plant, but other plant specialists from special departments are also involved in the process.

For regular evaluation of operational feedback effectiveness of experience from its own operational events, the main criterion is event non-recurrence for the same root causes. Repeated events or problems are regularly evaluated by ČEZ, a. s. NPPs management in annual reports of the operational events and possible further measures are proposed. For tracking problematic areas, the trends, precursors and coding of event causes are used. This is elaborated as a part of the annual report "Feedback from internal events".

Three types of events are distinguished in the monitoring system (process):

- Events important from the viewpoint of nuclear safety (INES classification higher than 0). These events shall be discussed by the Events Investigation Commission established on the relevant NPP, and the root causes together with the adopted corrective measures are regularly evaluated by SÚJB inspectors.
- Minor (less significant) events (INES classification always less than 0, classified out of scale). These events are investigated within the work order of the corresponding departments.
- Events without consequences ("near misses"). These events are treated in the same way as the events in the preceding paragraph.

The Events Investigation Commission, which is established as the advisory team of the executive director of NPP for identification of causes and for corrective measures and conclusions from the events investigation in individual power plants, confirms at its regular meetings the completeness of the investigations of safety related event causes and adopts corrective measures for the elimination of their causes for the purpose of prevention of their repeating. The most severe events at power plants of ČEZ, a. s. (nuclear, as well as thermal and water power plants) are discussed at the Failure Commission of Production Division and the experience from these events is transmitted back to all power plants. Both commissions are elements of the safety self-assessment of the licence holder, and their activity and results are subject to independent supervision and evaluation by special departments that are not responsible for operating results. In accordance with the law, the SÚJB supervises this process, and in some cases of important events, inspects the progress of examination and assessment of sufficiency of remedial measures taken in the course of event management.

## **4.3 ARTICLE 6.3**

### **4.3.1 Legal requirements for prevention of accidents**

The legislation valid in the Czech Republic for this field and its implementation in practice is compliant with the current IAEA requirements on safety. The operated Dukovany NPP and Temelín NPP are designed with respect to the defence-in-depth concept against radioactive substance release with the goal to prevent occurrence of accidents and to mitigate their radiation consequences. Applied technologies are either well proven or verified by the tests combined with computational analyses.

The fundamental legal documents relevant for this field are the Atomic Act and its implementing legal regulations esp.:

*SÚJB Decree No. 195/1999 Coll.*, on Requirements on Nuclear Installations for Assurance of Nuclear Safety, Radiation Protection and Emergency Preparedness, containing a number of specific technical requirements for reactor cooling systems, containment, energy supplying systems and their backup,

including requirements for functioning during normal and abnormal operation and under accident conditions, including external events which may be realistically expected to occur based on the history of the given site (see also the SÚJB webpages <http://www.SUJB.cz/>).

Provisions about the assurance of heat removal and backup of electric power supply are particularly important from the viewpoint of technical content. Article 3 of the Decree specifies requirements on implementation of defence-in-depth concept: "The nuclear safety of nuclear installation shall be assured through the defence in-depth, based on the use of multiple physical barriers preventing the propagation of ionising radiation and radionuclides into the environment, and the multiple use of system of technical and organisational measures being used to the protection and preservation of effectiveness of these barriers, and at the same time to the protection of personnel and other persons, inhabitants and environment."

*SÚJB Decree No. 106/1998 Coll. on Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities* contains a number of specific technical requirements for the documentation for safe operation (see also the SÚJB websites <http://www.SÚJB.cz/>).

There are, however, no direct technical requirements for the content of operational manuals and guidelines in the Legislation, especially for situations corresponding to Beyond Design Conditions and Severe Accidents. This situation was temporarily bridged by issuing Regulatory Safety Guides, solving the compliance of the Regulatory requirements with the WENRA Reference levels (January 2008) (see also the SÚJB websites <http://www.SÚJB.cz/>).

*BN-JB-1.0* - Regulatory safety requirements to nuclear installations

*BN-JB-1.11* - Requirements to implementation of EOPs and SAMG Type Procedures

Concurrently, SÚJB has stipulated in a licence for further operation for all units a set of conditions aiming to reach an adequate level of technical and organisational measures for coping with severe accidents management and for preventing radiation accidents.

Radiation protection is regulated by the Atomic Act and its implementing Decrees, namely No. 307/2002 Coll., on radiation protection, as amended. Presently, this legislation is being amended based on a new documents "The Recommendations of the International Commission on Radiological Protection, ICRP 103, 2007", directive 2013/59/Euratom on Basic Safety Standards for protection against the dangers arising from exposure to ionising radiation, and "Radiation Protection and Safety of Radiation Sources International Basic Safety Standards, IAEA".

#### **4.3.2 Legal requirements for mitigation of accident consequences**

Article 3 of the Atomic Act lays down following responsibilities and obligations of regulatory authority in emergency preparedness. The SÚJB:

- Approves of on-site emergency plans and their modifications after discussion on the relations to off-site emergency plans; the approval of on-site emergency plan is one of the conditions for obtaining a licence for the commissioning of the installation and its operation,
- Establishes an emergency planning zone, based on the licensee request,
- Controls the activity of the National Radiation Monitoring Network and performs the activities of its head office,
- Ensures the activities of the Emergency Response Center and international information exchange on the radiation situation,
- Ensures, by means of the National Radiation Monitoring Network and based on assessment of the radiation situation, the background information necessary to take decisions aimed at reducing or averting exposure in the case of a radiation accident,

- Provides the public with adequate information concerning the results of its activities, unless they are subject to state, professional or business secret, and publishes once a year a report on its activities and submits the report to the Government of the Czech Republic and to the public.

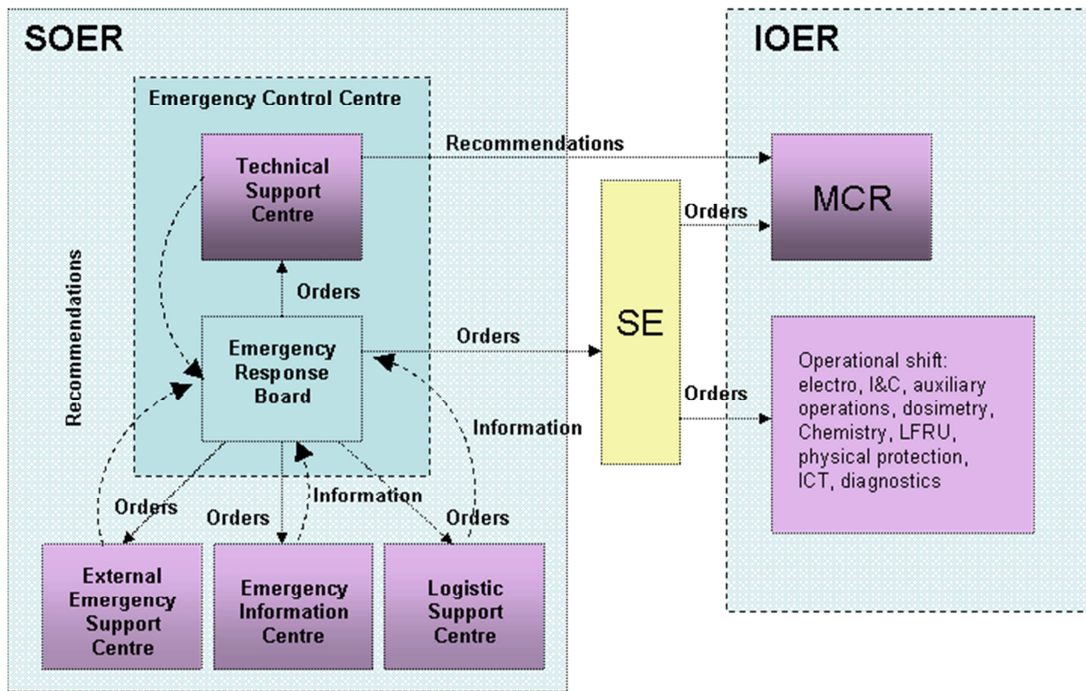
Art. 4 of the Atomic Act lays down, among others, principles for performance of radiation activities and regulation of emergency exposure. The principles for averting or reducing exposure due to radiation accidents and exposure of people who participate in the mitigating interventions are elaborated in the implementing SÚJB Decree No. 307/2002 Coll., on radiation protection.

Obligations of licensee in emergency planning and preparedness are established by Atomic Act (esp. Art. 17 – Art.20) and its providing regulations. Pursuant to the Act licensee is obligate in particular to:

- Ensure emergency preparedness of its nuclear installation or workplace with ionising radiation sources pursuant to the Atomic Act,
- Elaborate an on-site emergency plan, which includes intervention procedures and intervention instructions related thereto,
- Create an emergency response system,
- Classify extraordinary events,
- Ensure radiation situation monitoring at its workplace, and if defined, also in the emergency planning zone,
- Participate in the operation of warning and notification system in the emergency planning zone, if defined.

In addition, the operator of NPP:

- Adopts measures to carry out notification and warning in the emergency planning zone,
- Keeps an overview of forces and means deployed to remedy the consequences of an emergency on the premises of NPP,
- Prepares a contact plan (names of institutions, addresses and method of contact),
- Submits the results of analyses of possible radiation accidents and the estimates of potential radiological effects on the population,
- Sends an “off-site support” specialist to the Regional Crisis Staff,
- Establishes an emergency control centre, which is the workplace of an emergency staff and technical support centre,
- Within the organisation of emergency response, creates a stand-by organisation of emergency response system (see Figure below).



**Figure 4-1: Scheme of organisation of emergency response of NPP, with mutual links and information flow**

Note: SOER – stand-by organisation of emergency response, IOER – internal organisation of emergency response, SE – shift engineer, MCR – main control room, I&C – instrumentation and control, , LFRU – local fire rescue unit, ICT – information and communication technology.

Pursuant to Government Regulation No. 11/1999 Coll., the NPP operator is obliged to ensure press and information campaign for population preparedness (i.e. issue of the Population Protection Manual, training for representatives of local authorities). The Population Protection Manual is prepared in cooperation of The NPP operator with local bodies of crisis management, Ministry of Interior – GR HZS ČR and the SÚJB, is updated once in two years and is distributed to all inhabitants within the emergency planning zone. The manuals contain information on how the inhabitants should proceed after the warning in the emergency planning zone in the case of needed sheltering, application of iodine prophylaxis and on the announcement of preparation for evacuation. See also Chapter 6 of the report.

In emergency response, the operator follows its on-site and off-site emergency plans. In response to radiation accident, the operator cooperates closely with the state administration and local authorities, and acts in accordance with the general obligations imposed upon legal persons for the case of response to the crisis situation occurred pursuant to Act No. 240/2000 Coll.

Details and requirements for emergency preparedness in the case of extraordinary events (radiation incidents and accidents) are established in the National Report of the Czech Republic on Emergency Preparedness and Response under the Convention on Early Notification of Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (March 2014) [3] published on the website <http://www.sujb.cz/en/reports/> implementing regulations related to the Atomic Act as presented in Article 4 and in Annex 1 of this Report.

### 4.3.3 Examples of measures taken by the licence holder

The Periodic Safety Review, Final Safety Analysis Report and its periodic revisions, and successful implementation of the corrective measures program are considered to be one of the main pieces of evidence that the design and the construction of the nuclear installation provide several reliable



protection levels (defence-in-depth) against radioactive material release aimed at preventing accidents and mitigating their possible radiological consequences in compliance with in the IAEA document INSAG-10.

The operation of the Dukovany NPP units has unequivocally proven that the design of this nuclear installation ensures reliable, stable and easily controlled operation. Over the years, the plant underwent a number of modifications done with the objective to minimize the possibility of a human factor error and to improve the man-machine interface, especially in the process control system. Additional modifications are scheduled within the Modernization Program of Dukovany NPP).

For reliable and safe operation with emphasis on human factor and man-machine interface, both the design and the technical tools of the main control rooms are very significant. The main control room renovated within the "I&C system refurbishment project" provides:

- synoptic view of the equipment condition, fast and easy orientation of the main control room personnel during normal operation as well as during transients. The original situation has been improved further by changes in the instruments' ergonomic design implemented as a result of the operators' initiative,
- fast and easy equipment control from the main control room,
- appropriate design of the failure and emergency warning systems which contributes to timely and correct identification of failures. Innovations were implemented with emphasis on improvement of the man-machine interface,
- appropriate combination of analogue (classic) type signalling and control of the main control room with digital elements – computer based equipment which is implemented to the main control room,
- more extensive computerization in the main control room improves the personnel's work efficiency and has a favourable effect on the man-machine interface and thus limits possible errors due to the "human factor". This concerns in particular a series of supporting computer programs performing auxiliary calculations enabling the utilization of documentation.

The Periodic Safety Review, Final (Preoperational) Safety Analysis Report and its periodic revisions, and the implementation of the corrective measures identified by PSR are considered to be one of the main pieces of evidence that the design of a nuclear installation provides for several reliable levels and methods of protection against a release of radioactive materials (defence in depth), also with a goal to prevent the occurrence of accidents and to mitigate their radiological consequences should they occur.

The results of the "EU stress tests" review – targeted evaluation of safety margins and resistance of both NPPs against extreme natural conditions, loss of electric power supply, loss of heat removal into the ultimate heat sink and the ability to manage the situation in case of scenarios leading to a severe accident for most accident scenarios – have confirmed the safety and time margins of these designs, sufficiently robust barriers and design features ensuring defence in-depth levels. These design features are supported by qualified personnel and administrative and technical provision of accident management (the high resistance of both the power plants against extreme effects). No problem/condition was identified at any power plant that would require immediate measures. Both the power plants are able to safely withstand even highly improbable extreme emergency conditions without endangering the plant surroundings. Results of the stress tests have confirmed the fact that the designs and actual state of both NPPs provide sufficient margins to avoid severe accidents.

In respect to external risks, the strengths of both the power plants include in particular:

- robust and conservative design ready to face demanding conditions;
- design that is continually checked and reviewed against the current safety requirements,
- continual process of incorporation of new safety requirements;
- two large water reservoirs/dams for raw water at both the power plants;
- a robust supply of cooling water inside the power plants;

- compact racks of the spent fuel storage pool ensuring subcriticality of fuel even in case of flooding with pure water;
- at Dukovany NPP, a particularly large volume of hermetic compartments (bubbler condenser system) and relatively smaller source term (lower reactor power parameters) and the possibility of using diverse means for heat removal (fire pumps);
- at Temelín NPP, the spent fuel storage pool located inside the full-pressure containment.

**The electric power supply** sources at Dukovany and Temelín NPPs ensure a sufficiently robust design and level of safety in the event of an external loss of electric power supply. The design benefits from a high level of mutual independence between working and backup sources of on-site power and redundancy of secured power supply systems that supply safety-important systems and components and have their own emergency sources (DG and accumulator batteries). The unit operating on power has a higher design resistance against a loss of electric power supply than during outage for refuelling. The least favourable case from the viewpoint of safety assurance is the loss of electric power supply at all/both units at a time.

On both plants, another alternative method of long-term charging of accumulator batteries and other necessary systems is planned by the installation of other AC sources available on the sites. (This has been proposed as a measure to further increase the plant's resistance against a loss of electric power supply).

**The ultimate heat sink** (UHS) for Dukovany and Temelín NPPs units is the surrounding atmosphere. Unused heat from the operation of a unit on power or residual heat after the reactor shutdown may be removed into the ultimate heat sink – the atmosphere – by several methods. The transfer of heat between safety-important heat sources and the atmosphere is ensured by the Essential Service Water system.

Despite the fairly robust barriers and the defence – in-depth levels, based on the results of evaluation of safety margins for initiation events, loss of safety functions and measures for management of beyond-design basis and severe accidents at Dukovany and Temelín NPPs, it is possible to conclude that for the highly improbable beyond-design basis situations, some opportunities have been identified for further improvement of safety/resistance of the power plant.

Each identified opportunity was classified from the viewpoint of importance for the size of safety margin, i.e. resistance against a potential loss of ability to perform basic safety functions and preparedness to manage the resulting situation. When assessing a significance of the risks, the number of defence in-depth levels was taken into account which would have to fail before the occurrence of the given situation and the time for which the unit is able to resist with the existing safety margins. Until then it is necessary to have sufficient means to ensure the required functions or to adopt subsequent protective measures to limit irradiation and to protect persons.

The improvement measures, identified for the Dukovany NPP, are:

- diverse means to make up water and to remove heat from steam generators, reactor core and spent fuel storage pools,
- increasing the capacity of the system for the liquidation of post-accidental hydrogen,
- development of “shutdown SAMG” for outage/severe accident in spent fuel storage pools,
- adding radiological situation measurements on spent fuel storage pools into the Post Accident Monitoring System
- cooling of the melt from outside the Reactor Pressure Vessel
- analyses of usability of the equipment for SAMG
- training of severe accident scenarios management

The improvement measures, identified for the Temelín NPP, are:

- diverse means to make up water and to remove heat from steam generators, reactor core and spent fuel storage pools,
- alternative supply of Diesel fuel from a tank to ensure long-term operation of DG,
- alternative making-up of water into the containment sump,
- implementation of the system for hydrogen liquidation in the containment for severe accidents,
- localization of the core melt outside or inside the Reactor Pressure Vessel,
- verification of functions of the equipment in beyond-design operating conditions,
- development of “shutdown SAMGs” (fuel damage in case of open reactor/in spent fuel storage pools),
- increasing the capacity of the system for liquidation of post-accidental hydrogen,
- increasing the coolant supply in the containment to be used for emergency making-up,
- ensuring the habitability of MCR and ECR after transition of a severe accident into the ex-vessel phase,
- analyses of usability of the equipment for SAMGs,
- training of management in severe accident scenarios.

The details of the "stress tests" analysis are in [6].

## **4.4 ARTICLE 6.4**

### **4.4.1 National legislative, regulatory and organisational framework for Management System**

The principle of priority to nuclear safety has been fully incorporated into the Atomic Act. Chapter 2 of the Act establishes general conditions for the performance of activities related to the utilization of nuclear energy. Art. 4 para 3 of the Act unequivocally establishes that:

*"Whoever performs practices related to nuclear energy utilization or radiation practices shall proceed in such a manner, that nuclear safety and radiation protection are ensured as a matter of priority."*

Requirement on introduction of quality assurance system formulated in Art. 4 para 8 of the Act are further developed in implementing decree to the Act – SÚJB Decree No 132/2008 Coll.

The SÚJB checks compliance with the Act and implementing acts issued pursuant to it. The Office carries out inspections at the premises of licensees (and other persons specified in Atomic Act) during which inspectors check whether licensees (and other persons) are observing provisions of this Act and implementing regulations, and whether they are keeping to the subject and scope of the issued licence, including specified conditions.

Within the scope of its authority and competence, the SÚJB performs observation and oversight of the "priority to safety" principle, as established by the Atomic Act, in the course of all activities related to the utilization of nuclear energy. All organizations which participate in the design, manufacturing, construction and operation of nuclear power plants are subject to SÚJB inspections that especially assess the management approach to safety related issues and how individuals performing safety related activities are motivated in respect to this issue.

### **4.4.2 Example of the management system implementation in the NPP operating organisation**

In accordance with the valid legislation as well as the international obligations of the Czech Republic, ČEZ, a. s. accepts responsibility for safety assurance at its nuclear power plants, on personnel and public protection and protection of the environment. In order to fulfil this responsibility, the company has undertaken to create and further develop conditions for nuclear safety with sufficient human and financial resources, effective management structure and control mechanisms.

The company keeps the development of the conditions for fulfilment of the safety obligations (strategic goals) above, in compliance with Safety and Environment Protection Policy and Quality Policy of ČEZ, a. s., internally drafted and declared by the decision of the Board of Directors of the company.

Targeted fulfilment of the obligation to a superior position of the requirements for safety and environment protection before the requirements of production, as well as fulfilment of the obligation concerning continuous improvement of safety culture (as an integral part of company culture), also includes yearly updated strategic tasks of the Chief Executive Officer and Managing Director of Production Division of ČEZ, a. s. as well as the tasks of the Action Plan for improvement of safety culture, determined for the planning period.

The basic framework of the powers and responsibilities and the method of assurance of the activities performed for fulfilment of all safety obligations within the company, are defined by the Rules "Organization structure, the role and powers of particular departments" and the "Manual of integrated management" along with the related Directive "Safety Management of ČEZ, a. s.". The above mentioned controlling documents describe, in terms of organization and process, the control mechanism of activities in the fields of performance of activities important to nuclear safety.

One of the tools for systematic assessment of the level of nuclear safety is a set of safety indicators, which characterize the trends of the nuclear safety level and the radiation protection level in nuclear power plants during the past period (week, month, year). Through the regular evaluation safety reports, the company's managers thus obtain the feedback from the assessment of safety requirement implementation efficiency.

To solve the most significant (principal) safety issues related to the operation of nuclear installations, advisory bodies of Chief Operation Officer and Production Manager operating on the top management levels of ČEZ, a. s., selected representatives from the special deciding departments and from jointed sections of the company as well as invited specialists all work in the advisory bodies (Committee on the Safety of ČEZ, a. s. Nuclear Installations and Safety Committee of the Production Section). The basic function of these committees is to evaluate the safety level of nuclear installations and to identify the topical and potential safety related problems completed with their assessment and subsequent recommendations for optimal solution.

A separate comprehensive assessment procedure has been developed for each planned plant and organisation modification (according to the requirements of the "Categorization and safety assessment of organizational changes within ČEZ, a. s.). The proposed modifications (and their safety related assessment) are submitted to the state regulatory body for appraisal before their implementation. All approved implemented changes are always subject to an exhaustive safety related analysis in the specified intervals.

## **4.5 ARTICLE 6.5**

Obligations of licence holders to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to nuclear safety of a nuclear installation are set down in Atomic Act, Article 18. Specifically, there is said that licence holder is also obliged to:

- para 1 letter s) „provide for and maintain adequate financial and human resources required to fulfil their obligations with respect to nuclear safety of a nuclear installation”, and
- para 1 letter o) “provide a system of training and verification of competence of personnel in accordance with the importance of the work they perform”.

Activities directly affecting nuclear safety and activities especially important from the radiation protection viewpoint, qualification and professional training requirements, the method to be used for their verification and the issue of authorisations for persons authorised to perform specific

activities (defined as „selected personnel“) are laid down in an implementing SÚJB Decree No. 146/1997 Coll.

The Atomic Act establishes as well, as one of general conditions, that any person performing or providing for practices related to nuclear energy utilization shall have an implemented quality assurance system to the extent and in the manner set out in an implementing regulation, specifically SÚJB Decree No. 132/2008 Coll., on Quality Assurance System in carrying out activities connected with utilization of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard to their assignment to classes of nuclear safety. Quality Assurance Programs for the activities being licensed must be approved by the SÚJB.

Pursuant to Art. 3 lettre j) of the Decree, the Quality assurance System must: "provide personal, technical, material and financial sources including appropriate working environment necessary to maintain and improve the quality assurance system, and to perform processes and activities, and to introduce, maintain and continuously improve their efficiency."

#### **4.5.1 Example of financial provision of nuclear safety enhancement at nuclear installations in the course of their operation**

The documentation of the licensee's – ČEZ, a. s. – quality assurance system includes the commitment to arrange for sufficient financial resources available for assurance of the safe operation of the company's nuclear power plants. This commitment is included in the company's Organization Rules. In connection with the ČEZ, a. s. Safety and environmental protection policy, the provision of sufficient resources for assurance of nuclear safety and personnel protection as well as environmental protection has been described in detail in the relevant control documents.

Safety maintenance and enhancement on the nuclear power plants operated by ČEZ, a. s. are performed in a controlled manner. Financial planning (strategic plan, business plan and annual budget) is carried out in compliance with the Group Management System of ČEZ, a. s.

As for projects (specific actions), business plans and project plans subject to approval at the division management and company management levels of ČEZ, a. s. are particularly prepared, according to the Signature Rules of the company, and further the individual projects are incorporated into the company budgets for the relevant year. Funding for the individual projects is provided from the company's unrestricted sources.

#### **4.5.2 Example of the assurance of financial and human resources for the decommissioning of nuclear installations and management of radioactive waste generated during their operation**

##### *4.5.2.1 Radioactive waste*

The management of radioactive wastes, including those generated at nuclear power installations, is laid down in Art. 24 and 27 of Atomic Act which stipulate:

- Art. 24 - "An owner of radioactive waste or other natural person or legal person managing the assets of an owner in such a manner that radioactive waste is generated (hereinafter referred to as "generator") shall bear all costs associated with its management, from its time of origin to its disposal, including monitoring of radioactive waste repositories after their closure, and including the necessary research and development activities."
- Art. 27 - "Generators shall allocate to their own debit financial provisions to cover expenses for disposal of radioactive waste which have been arising or will arise".

The financial means to be used to cover costs associated with radioactive waste and spent fuel storage are, in accordance with the Atomic Act, deposited by the waste generating bodies to an

account, held by the Czech National Bank, on the so-called "Nuclear Account". The amount and method of payments to the Nuclear Account are determined by the government of the Czech Republic through its Regulation. The Nuclear Account, which is part of the state financial assets, is administered by the Ministry of Finance. The funds on the Nuclear Account shall only be used for the purposes specified by the Atomic Act.

The Radioactive Waste Repository Authority (SÚRAO) was founded by the Ministry of Industry and Trade as the organizational body of the state established to carry out activities related to radioactive waste final disposal. Activities of the Radioactive Waste Repository Authority are carried out under by a government approved statute, budget and the annual, the three-year and the long-term plans of activities. To cover the activities of the Authority, the Ministry of Finance transfers financial resources from the Nuclear Account to a separate account of the Authority, always based on the plan of activities of the Authority, approved by government and on its planned budget. Such resources together with the income from Authority operations are the subject of an annual Nuclear Account settlement.

Radioactive waste management in the nuclear power plants of ČEZ, a. s. is executed by separate organizational departments (their activities also include the issue of cold waste, decontamination and technical issues concerning decommissioning) integrated into Safety Section in the Production Division.

#### *4.5.2.2 Decommissioning*

The basic obligations of a licensee as specified in Art. 18, para 1, letter h) of the Atomic Act include the obligation to evenly create financial reserves for the preparation and actual decommissioning of nuclear installations. The amount of this reserve shall be established based on the decommissioning plan, approved by the SÚJB and based on the estimate of the costs for given decommissioning technology and verified by the Radioactive Waste Repository Authority. The method of creating the reserves is governed by a separate legal regulation, issued by the Ministry of Industry and Trade of the Czech Republic. The creation of reserves is controlled by the Radioactive Waste Repository Authority. Currently, proposals for the decommissioning methodology have already been approved for Dukovany and Temelín NPPs and the Spent Fuel Storage Facilities (Interim Spent Fuel Storage Facility Dukovany, Spent Fuel Storage Facility Dukovany and Spent Fuel Storage Facility Temelín). Monetary reserves for decommissioning are created in compliance with legal regulations for all nuclear facilities operated by ČEZ, a. s. The funds for decommissioning nuclear installations are kept on a blocked account and can only be used for preparation and implementation of decommissioning.

The issue of decommissioning documentation preparation is assured at the licence holder – ČEZ, a. s. by a permanent multi-job work team consisting of experts from the Production and Administration Division whose knowledge and experience can be utilized in the preparation of a decommissioning plan. In terms of organizational system, the team members are the representatives of the following departments: Fuel Cycle, Safety, Central Engineering and Analytical Support of Production Division. The team covers technical, financial, investment and organizational issues of decommissioning, including the issue of assurance of the relevant human resources. Establishment of the team and all activities performed in this field are executed in compliance with the requirements for quality assurance adopted within ČEZ, a. s. and included in quality assurance programme for nuclear activities.

#### **4.5.3 Role of the regulatory body in the human factor assessment**

The SÚJB systematically monitors the impact of human and organization performance on the operational safety. Conclusions of the plant's so-called "Failure Commission" are discussed at regular meetings. In this respect, the SÚJB particularly reviews whether the events with contribution of human and organizational erroneous actions were investigated in sufficient detail, whether corrective actions address determined causes so that recurrence of the events is prevented and

whether such corrective actions are implemented in the proper and timely manner. In particular cases, a special inspection related directly to a certain event with significant contribution of human and organizational factors can be carried out. The SÚJB further evaluates separate reports sent on an annual basis, which include the trend analysis of events with contribution of human and organizational factors by selected aspects.

The field of human factor is also a separately evaluated element within PSR.

A system of verification of special professional capability for selected personnel of nuclear installations is instrumental in the prevention of human error occurrence. In accordance with the Atomic Act (the SÚJB competence in Chapter 3 of the Atomic Act) the SÚJB shall establish for this purpose a State Examining Board and identifies activities with immediate impact on nuclear safety. Verification of special professional capability for selected personnel is carried out in form of an exam before the examining board.

## **5 Article 7 Expertise and skills in nuclear safety**

### **5.1 Licence holders**

#### **5.1.1 Legal requirements**

Art. 17, para 1, letter i) of the Atomic Act introduces the following general obligation to the licensee: *"Entrust performance of the specified activities only to such persons who fulfil conditions of special professional competence and are physically and mentally sound, and for persons performing sensitive activities under a specific legal regulation verify their competence in respect to security in a manner laid down in a specific legal regulation"*.

According to Art. 18, para 1, letter o) the licensee is also obliged to: *"Provide a system of training and verification of competence of personnel in accordance with the importance of the work they perform"*.

Preconditions for the performance of activities directly influencing nuclear safety are established by the provision of Art. 18, para 3 of the Atomic Act. Such activities may only be performed by persons who are physically and mentally fit, with professional competence verified by the State Examining Board and to whom the SÚJB has granted authorization for the concerned activities, upon an application by the licensee.

Professional training of the selected personnel of nuclear installations may, according to Art. 9, para 1, letter n) of the Atomic Act, be organized by a physical or legal entity only based on a respective licence granted by the SÚJB. The documentation required for the issuance of such a licence is listed in an Appendix to the Atomic Act.

SÚJB Decree No. 146/1997 Coll., as amended, in compliance with the quoted provisions of the Atomic Act, specifies activities with immediate impact on nuclear safety and activities particularly important for radiation protection, requirements for qualification and professional training, method of verification of special professional competence and authorization process of the selected personnel, as well as the format of the required documents to obtain a licence for the training of selected personnel.

The above-mentioned legal regulations have been complemented with the Safety Guide BN JB-1.3 issued by the SÚJB in December 2010. It specifies professional education and training of personnel for the performance of work activities (positions) at Czech nuclear installations in more details. The Guide sets down criteria and provides methodical guidelines for the management and execution of

training of employees of nuclear installation, operators and employees of legal and physical entities whose activities (positions) at nuclear installations are important for nuclear safety, with the objective to minimize risks caused by human failure.

SÚJB Decree No. 193/2005 Coll. establishes the list of theoretical and practical fields of knowledge contained in the education and training required in the Czech Republic for the performance of controlled activities falling within the authority of the SÚJB.

### **5.1.2 Application of legislative requirements to the holders of licences for the operation or construction of nuclear power plants**

The only guarantor of personnel training, from the Atomic Act viewpoint, within ČEZ, a. s. is the NPP Training Section, which is a part of the Personnel Training Centre section within the Production division. The main purpose of this section is to perform professional training of personnel for both power plants and training on individual entry to NPP for external suppliers. The section is also, in accordance with the internal control documents of the company, responsible for the fulfilment of a concept, strategy and system of professional training of personnel in the area of nuclear activities in ČEZ, a. s.

Within the meaning of personnel training, the activities are carried out in three training and educational centres (in Brno, at Dukovany NPP and at Temelín NPP), which are incorporated in the NPP Training Section in terms of organization.

The respective managers at all management levels are responsible for the professional competence (qualification) of their subordinates. Principles governing the process of professional personnel training in respect to nuclear activities are described in the internal instruction.

The NPP Training Section, as guarantor of the process, permanently keeps, in accordance with the provision of Art. 9, para 1, letter n) of the Atomic Act, the validity of SÚJB licence for the training of nuclear installations personnel as well as of selected personnel of workplaces with ionizing sources.

#### *5.1.2.1 Example: The concept of qualified personnel training of ČEZ, a. s.*

The objective of personnel training is to assure that each individual of a nuclear power plant possesses the necessary knowledge, skills and habits required for achieving, maintaining and developing the relevant professional competence. The fulfilment of this objective is verified by examinations and, for selected functions, formally confirmed by authorizations issued by the employer to perform the concerned activities. For each position, the requirements for education, professional experience, health and psychical fitness, probity and especially for continued professional training of the personnel are established before they start to perform their respective activities.

A significant proportion of employees are university graduates or technical high school graduates. For this reason the training process at the nuclear power plant focuses on the provision of additional special knowledge in the area of nuclear installations, acquisition of practical professional knowledge and skills necessary to perform the work concerned. Special attention is paid to the units' main control rooms' operators, shift and safety engineers, operation and inspection physicists (selected personnel). Their training is always concluded with examinations before the State Examining Board (for more details on the State Examining Board see Chapter 5.2).

The *personnel training* is further divided into *basic training*, *periodic training* and *professional training*.

The process of personnel training starts with recruitment and hiring. New workers are always selected according to the criteria established in the internal control document "Personnel Selection".



The selection process includes verification of health and mental fitness of the employees for their future positions.

The responsible department puts the personnel training system into practice, implements this system and evaluates the given process. The department is fully responsible for the application of new training techniques and means in order to improve the efficiency of personnel training.

The Human Resources Development section administers the central files of personnel qualification maintained for each work activity performed at all departments of the nuclear power plant.

#### *5.1.2.2 Basic, periodic and professional training of personnel of ČEZ, a. s.*

The purpose of *basic training* is to acquire or to improve the specific professional capability necessary for the performance of a given work activity. Basic training is obligatory for each employee who performs a work activity important for nuclear safety or radiation protection. Basic training is provided to all new employees and to the employees trained for different work.

The employees are assigned to one of the training groups according to their work activity and professional specialization. From the viewpoint of nuclear safety the five following groups are defined, for:

- management,
- selected personnel,
- employees of engineering departments,
- shift and non-shift operating personnel,
- maintenance personnel.

From the viewpoint of radiation protection, three groups are defined in agreement with SÚJB Decree No. 307/2002 Coll., on radiation protection:

- selected personnel,
- radiological personnel,
- other employees.

The preparation is executed according to approved training programs drafted in co-operation between the guarantor of preparation (Preparation Department of NPP) and particular departments of NPP. The minimum duration of the basic preparation meets the requirements of SÚJB Decree No. 146/1997 Coll. The forms of the basic preparation are determined based on training program, preparation group, specialization and qualification requirements of qualification catalogue as follows:

- theoretical/classroom training,
- secondment at the nuclear power plant,
- training at a full-scale simulator,
- examination to obtain a Certificate,
- training for a specific position,
- examination to obtain an Authorization,
- authorization for a work activity.

The individual mutually linked-up parts of theoretical and practical training are combined into modules, and the entire duration of the basic training varies from 6 to 88 weeks, depending on the type of work to be performed after training.

A specific form of the basic preparation is also the preparation for a change in work activity (re-qualification) that is the same as the basic preparation defined by training programs prepared in compliance with the requirements of SÚJB Decree No. 146/1997 Coll.

*Periodic training* serves to maintain, update or deepen the specific professional competence of an employee as required to carry out his/her work. Each employee who performs an activity important for nuclear safety or radiation protection is obliged to undergo periodic training.

The forms of periodic preparation are determined based on the training program, preparation group and qualification requirements as follows:

- theoretical/classroom training (training days, training dealing with industrial safety, fire protection, emergency preparedness, access to controlled area, training in physical protection, etc.),
- training at a full-scale simulator,
- training and examination to renewal of Authorization.

The total duration of particular forms of periodic preparation differs according to the type of work activity, and the minimum duration meets the requirements of SÚJB Decree No. 146/1997 Coll., ranging from several hours to two weeks (simulator) a year according to the type of work activity.

The purpose of *professional training* is to maintain, update, deepen or improve the specific professional competence of an employee as required to carry out his/her work. Each employee whose work involves nuclear installations is obliged to undergo the professional training. The exposure to professional training is very important for employees who perform activities important for nuclear safety or radiation protection, since the training represents a precondition for continuing validity of the Authorization. The duration of this form of training depends on the type of work activity and may be carried out as a one-off training or long-term course.

#### 5.1.2.3 *Training of Dukovany NPP personnel at a simulator*

A full-scope simulator VVER 440 is used for basic and periodic training of Dukovany NPP personnel – a replica of the main control room or a full-scope display simulator, both situated directly at the power plant site.

The replica-type simulator is a high-fidelity copy of the operating personnel workplace in the main control room, with all counters and operating panels, including all instrumentation and information system screens placed therein. The simulation of technology, technological processes as well as the control and management system is performed on a modern system based on SILICON GRAPHICS computers using simulation software supplied by the GSE and OSC companies.

The simulator also includes a separate workplace for the instructors, with the so-called instructors' station, from which the instructors control the simulator and manage the training (set up the initial reactor condition, enter defects of the equipment, and on the operator's request, simulate manipulations performed on the real unit by the operating personnel, etc.). Communication between the training main control room staff and the instructor is via a closed circuit telephone line. The instructor has also a camera system with a recording device at his disposal as well as a multiple-function classroom for evaluation of the training and theoretical part of teaching.

For training there is a display version of the simulator at disposal. In this version, the results of computational model are represented in virtual form of the main control room on computer screens. Within the I&C System Renovation and Design Margins Utilization projects, the models on both simulators are gradually updated in such a way that both re-qualification training of operative personnel for newly implemented systems and periodic training for the personnel of particular units before and after upgrading will be assured. The training is organized in such a way that most courses will be executed at a full-scale simulator.

#### 5.1.2.4 *Training of Temelín NPP personnel at a simulator*

The concept of training provided to the qualified personnel at Temelín NPP essentially follows the pattern used at Dukovany NPP.

The training of Temelín NPP personnel is performed at a full-scale VVER 1000 simulator on the site.

The workplace of operators has been designed identically with the real main control room and the construction part of the simulator hall has been adjusted accordingly. The simulation of technology and technological processes is performed on a modern system based on Silicon Graphics computers.

The information and control system of the simulator for operators is a customized WDPF system supplied by the Westinghouse Company. This company also supplied counters and panels, including instrumentation, for the full-scale simulator; identical counters and panels are used in the main control room.

The training is controlled from the instructor station and the communication and recording device is also available. Part of a full-scale simulator is also a multiple-function classroom used for the needs of theoretical teaching and training evaluation.

A display version of the VVER 1000 simulator has also been developed at the Temelín site, which is currently used both for training and for engineering purposes.

#### *5.1.2.5 Organization and provision of training at simulators*

The operating personnel training at the simulator runs according to the time schedule harmonized with the operation needs in accordance with the programs approved by the SÚJB, including examinations at the simulator.

The training instructors at the simulator at both sites are highly qualified personnel of the NPP Preparation section having minimal experience as a unit shift supervisor or control room supervisor and supplementary educational knowledge. Like control operative personnel, the instructors also have their training program of periodic preparation of training instructors at a simulator whose regular participation is helpful for keeping their knowledge and skills up to date.

Scenarios of all training activities in the given course are prepared, tested and approved for training implementation. The scenarios cover the following operating modes of the power plant reactor building technology:

- unit start-up from cold state to nominal power,
- unit operation at various power output levels,
- unit shutdown from the nominal power to cold state,
- liquidation of error conditions of the unit,
- liquidation of emergency conditions of the unit.

Scenarios of training tasks also contain a list of used and related documents, time requirements for the training, general and specific objectives of the training, description of the unit's initial state, brief theoretical description of the task, lecture scenario (description of the progress of task processed in tabular form), task analysis (instructions for training evaluation and records). Valid operating procedures are available at the simulator personnel workplace to solve tasks to the same extent as in the real main control room.

The simulators are also successfully used for the validation of operating procedures, preparation of tests for emergency exercise simulation and for other analytic activities.

#### *5.1.2.6 Evaluation of training*

Evaluation of training and verification of personnel capability is a precondition needed to establish efficiency and effectiveness of the training programs used for individual forms, stages and types of training. Results of such evaluations provide a feedback through which the contents and scope of the professional training are modified aimed at improving its effectiveness.

A system of verification of special professional capability for selected personnel of nuclear installations is instrumental in the prevention of human error occurrence. In accordance with the Atomic Act, the SÚJB establishes for this purpose a state examining board and identifies activities with an immediate impact on nuclear safety. Verification is carried out in form of an exam before the state examining board.

This exam consists of examination at a simulator, theoretical written and oral part, and a practical part, including examination at a simulator. The state examining board may decide to skip the

practical part or to allow the so-called integrated test (oral examination is directly linked to examination at a simulator) in the case of authorization renewal. A failed exam may be repeated by the applicant within a 1-6 month period, whereby the specific date is determined by the state examining board. Under a respective implementing regulation, an individual who has successfully passed the exam before the state examining board is granted a selected personnel authorization by the SÚJB for a period of 2 to 8 years.

### **5.1.3 Application of legislative requirements to holders of licences for the operation or construction of research reactors**

Principles governing the process of professional personnel training in respect to nuclear activities are described in the internal instruction of the Research Center Řež, licensee holder for research reactor operation. This regulation provides for the training of selected workers who perform work activities (duties) with an immediate impact on nuclear safety and radiation protection and whose specific competence was verified by passing the examination before the State Examining Board pursuant to Decree No. 146/1997 Coll., as amended, and the “List of Work Activities Important to Nuclear Safety, Requirements for Qualification, Vocational Training and Verification Method for Nuclear Installation” approved by the SÚJB.

The training of research reactor operators is divided into the following parts:

- Basic training,
- Periodic training,
- Training after event caused by human error.

#### *5.1.3.1 Basic training*

The aim of basic training is to deepen and amend the hitherto acquired knowledge, skills and habits of a worker with specific knowledge and practical experience so as to meet the qualification requirements set out for the actual performance of the work activity considered at the given nuclear installation. New recruits are obliged to complete the basic training in the scope of the relevant approved training programs.

The basic training within the training framework is differentiated in its content and scope, and always contains a theoretical and practical part. A head trainer appoints a trainer and an instructor for each trainee, who ensures, inter alia, that the relevant part of the training follows the curriculum.

The theoretical and practical parts of the training follow the “Curriculum for Training of Selected Workers” enclosed to the internal regulation.

Workers must be directed by an instructor in the practical part. The necessary theoretical knowledge of a trained worker must be verified before the practical part, in particular in the field of the appropriate operating regulations, and limits and conditions for safe operation. To this end, a head trainer must examine workers before the practical part and a record of examination must be made. A trained worker may carry out handling operations on technological systems of a nuclear installation in the practical part only within an approved program, under the direct, constant and immediate supervision by a designated instructor. The worker is unconditionally obliged to follow the instructor's instructions and comply with all safety measures.

A trainer or an instructor is obliged to examine his/her assigned trainee in all cases as specified by the curriculum and make a record thereof.

After the training has been successfully completed in compliance with this regulation and curriculum, and after the examination before the State Examining Board has been passed, CV Řež s.r.o. gives a licence to the worker to perform the specified work activities. The licence is issued by RCR Managing Director or by Department of Research Reactor Operation Director so authorised by the Managing Director.

#### 5.1.3.2 *Periodic training*

The aim of periodic training is to maintain and deepen the knowledge, skills and habits of a worker to perform his/her current work.

The periodic training includes the performance of work which is not to be interrupted for a period of more than 12 months. The training for licence renewal is carried out in the form of self-study, consultations with trainers, and the scope of approximately 50% of basic theoretical training is expected. This training does not include a separate practical part, because the workers concerned perform their duties during the training.

The selected workers are admitted to the examination before the State Examining Board in order to renew the licence to carry out handling operations at a nuclear installation only after successfully completing the periodic training.

#### 5.1.3.3 *Training after event caused by human error*

The training includes summary of the analysis of event, previous preparation (investigation, recording, testimony of the parties), theoretical training and on-the-job training to manage the situation. The training must be completed by workers who caused an event with direct cause with human error. The training must be conducted by a worker responsible for nuclear safety in the presence of direct head of the trained worker.

#### 5.1.3.4 *Records of trainings*

Records of basic training are kept for each worker being trained in compliance with the internal regulation and a report is kept of all examinations within this training. A head trainer is responsible for keeping the records and a trainer or an instructor is responsible for keeping the report.

In the case of periodic training, records of all lectures and exercises are kept. A head trainer is responsible for keeping the records. CV Řež s.r.o. is also obliged to keep all documents of the performance of training and of formal qualifications of workers to perform work activities (duties) at the given nuclear installation for a period of at least 10 years after termination of work activities of a worker at this nuclear installation.

### **5.1.4 Application of legislative requirements to the holders of licences for the operation or construction of training reactor VR-1**

Principles governing the process of professional personnel training in respect to nuclear activities are described in the internal instruction of the Faculty of Nuclear Science and Physical Engineering for Qualification and Training of Personal.

The Department of Nuclear Reactors of the Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague, as the operator of the VR-1 training reactor and at the same time, as the training workplace, is responsible for preparing the training programs.

The theoretical training and instructors for practical training of the Department of Nuclear Reactors are primarily covered by workers of the department or experts from practice.

The training of the selected workers has, as the previous ones, three following levels:

- Basic training,
- Periodic training to maintain qualification,
- Training to change the activity in case of change in the performance of activity

#### 5.1.4.1 *Basic training*

In the course of basic training, the acquired knowledge, skills and habits of a worker are deepened and amended with specific knowledge and practical experience so as to meet the qualification requirements set out to obtain a licence to perform work activities at the VR-1 training reactor.

The basic training consists of theoretical training, internship at a nuclear installation for a duration of at least five weeks and the practical part (on-the-job training) for a duration of at least five weeks.

The scope of theoretical training is divided into five basic groups:

- Selected texts of the theory of nuclear reactors,
- Research and experimental nuclear reactors,
- VR-1 training reactor – description and design,
- Safety of research nuclear reactors,
- Training reactor operation.

The practical training in each group takes at least one week. The practical part is normally preceded by the theoretical training (they can run in parallel), which is usually effected in the form of lectures in a training room, periodic consultations with a trainer and self-study. The practical training is divided into five basic groups:

- Practical information about the reactor,
- Operation of the technological systems of reactor,
- Handling operations on reactor,
- Reactor commissioning and operation,
- Experimental methodologies on reactor.

The training to perform the activity of the selected workers is carried out on the VR-1 reactor always under the supervision of the authorised worker. Only a worker having a valid licence to carry out the activity of the same or higher level as the one for which the training is conducted may carry out the supervision. The basic training on the VR-1 reactor is necessary to obtain a licence to carry out the activities of reactor operator or control physicist.

#### *5.1.4.2 Periodic training*

The periodic training is necessary for maintaining or renewing the licence for existing activities of selected workers of the VR-1 reactor. The periodic training must be completed by all workers of the VR-1 training reactor who carry out work activities on the reactor.

#### *5.1.4.3 Training to change the activity*

The training consists of the theoretical training and on-the-job training for a minimum duration of five weeks. The training to change the activity is necessary for obtaining a licence to carry out the activities of shift supervisor or commissioning group head.

#### *5.1.4.4 Licence to perform work activities*

The Department of Nuclear Reactors is obliged to document the professional competence of its instructors to train the selected workers of the VR-1 training reactor to the State Office for Nuclear Safety.

In case of successful completion of all stages of the training, the selected workers are obliged to pass the examination before the State Examining Board to obtain a licence for special competence in compliance with the requirements laid down in the Atomic Act.

The Dean of the Faculty of Nuclear Sciences and Physical Engineering, as the representative of VR-1 training reactor operator, issues (on the basis of the proposal of the Head of the Department of Nuclear Reactors) a licence to perform the given work activity to the worker who: successfully passed the examinations before the State Examining Board and obtained the licence to perform the given activity and complied with other qualification requirements laid down by legislation.

#### *5.1.4.5 Records of trainings*

The documentation of the performance of training and of the acquired qualifications of workers to perform the work activities (duties) on the VR-1 training reactor are archived for a period of at least five years after termination of their work on the reactor. The Head of the Department of Nuclear

Reactors and the head of reactor operation continuously evaluate the results of personnel training at all stages of the training.

## **5.2 Regulatory authority**

### **5.2.1 National arrangements for the education, training and retraining of the staff of the regulatory authority**

#### *5.2.1.1 Legislative requirements*

According to Art. 39 para 2 of the Atomic Act, SÚJB staff responsible for the inspection are inspectors of nuclear safety and inspectors of radiation protection (hereinafter "inspector"). The inspector is the only person competent to perform legal acts, must be a university graduate in the relevant field and must have three years of professional experience. An inspector must be professionally competent in matters under his supervision, must be a person of probity and eligible in terms of security in accordance with specific legal regulations in case of performing sensitive activities.

The inspectors are appointed by the Chairman of the Office.

#### *5.2.1.2 Description of the education, training and retraining system established by the regulatory authority*

The main training objective is to achieve the necessary qualifications and professional capability and to maintain competence in the activity required for the job-title and scope of work at the SÚJB. Special personnel training and maintenance of its competency is ensured in accordance with the SÚJB internal guideline "System of preparation, education and evaluation of SÚJB personnel".

The internal guideline contents two basic documents - the "Competence Job Profiles" and the "Catalogue of Development Activities".

The Competence Job Profile describes the individual job (it may be common for a group of jobs), including the mission of this job. The Competence Job Profiles are prepared for all jobs of the SÚJB including regional centres and site workplaces. The requirements for the method of performing work activities define the required competences (including the requirements both for "soft skills" and for "expertise and skills") and the desirable demonstrations (evidence of fulfilment of the required competence).

The Catalogue of Development Activities (hereinafter referred to as the "Catalogue") is a list of development activities which serves as a tool for training and development of SÚJB employees in relation to the system of their evaluation. It is structured into two main parts - development of soft skills, and development of expertise and skills. The Catalogue is a live document, which is amended and modified on a continuous basis.

Training activities of the individual SÚJB employees are specified based on the achieved level of their education, duration and level of experience and professional specialisation. At the same time, the strategy and needs of the SÚJB are taken into account, particularly requirements for performance of a particular job. The Individual Plan of Increasing Professional Capability (hereinafter referred to as the „IPOR) is then created for each employee by his/her direct superior.

The entire process of special training is a combination of general and specialized education of all employees irrespective of position or activity performance. The training is divided into the following levels, appropriate for the relevant group of SÚJB's employees:

- Initial training of employees (in a three-month probationary period),
- Training of employees to prepare them for a particular job - adaptation process (preparation for inspector examinations),
- Continual training of employees: including expertise, soft skills and general skills,
- Training of internal trainers and the top management.

#### 5.2.1.3 *Initial training of employees*

The initial training is intended for new staff of the SÚJB and is done in the course of a probationary period, usually within three months after starting work. The content and focus of the initial training of an employee are specified by the IPOR. The fulfilment of IPOR is evaluated before the end of probationary period.

The purpose of the initial training is to primarily provide an employee with an overview of the scope and competence of the SÚJB and its position within the state administration in the following modules: locally indicative, specialisation, universal and practical, in the form of consultation at workplaces, participation in training and seminars, self-study, etc.

The decision on continuation or termination of employment of a new employee in the SÚJB is the result of employee evaluation in a probationary period, carried out based on the evaluation of compliance with the requirements of initial IPOR and the evaluation of performance.

#### 5.2.1.4 *Training of employees to prepare them for a particular job - adaptation process*

The training within the adaptation process is initiated following the positive evaluation of the initial training and is intended for employees who are expected to perform the duties of inspector or any other highly specialised professional activities. The content and focus of the training within the adaptation process of an employee are specified in IPOR after an evaluation of the initial one.

The purpose of the training within the adaptation process is mainly to inform an employee in detail about legal regulations and internal documentation of the SÚJB, which govern and elaborate the scope of activity of the SÚJB, and relate to the performance of expected duties taking into account his/her past experience. The training focuses on the development of knowledge in technical fields, in particular reactor physics, thermodynamics, engineering, nuclear physics, electrical engineering, I&C systems, and radiation protection.

The adaptation process is completed by successfully passing the inspector examination.

The inspector examination verifies the competence to perform the inspector's duties within the meaning of the Atomic Act and is taken before the examining board of the SÚJB.

Based on the successful completion of the examination, positive evaluation of valid psychological test (psychological tests are renewed at a maximum interval of five years), compliance with the requirement for university education and minimum of three years of professional experience, the SÚJB's Chairperson appoints an inspector for the relevant scope of activity of the SÚJB in compliance with the Atomic Act.

#### 5.2.1.5 *Continual training of SÚJB employees*

The purpose of the continual training of employees is to maintain or upgrade their professional qualification necessary for performance of respective duties by the employees.

Continual training includes both professional and "soft" skills. The form and focus of continual training is specified in IPOR, based on the needs of the respective workplace and assignment of an employee to a particular job, i. e. in agreement with the Competence Profile of the job and the Catalogue of development activities, and with regard to the required number of credits for a period of three years.

The training is done in the form of self-study, internal training and seminars, and training, seminars and conferences organised by external entities, postgraduate study, etc. Nuclear safety inspectors performing everyday inspection in NPPs (so called local inspectors) and some inspectors from central office undergo training on full-scope simulator in the Training Centre of ČEZ, a.s.



Participation in the activities is evaluated on a continuous basis, at least once a year. IPOR may be then adjusted based on the evaluation. Final evaluation must be subsequently completed after three years and it is associated with adoption of a new IPOR.

#### *5.2.1.6 Training of internal trainers of the SÚJB and the top management of the SÚJB*

This type of training is intended for employees in the top management positions in the SÚJB and internal trainers, contributing to the internal training of SÚJB personnel.

The content-related focus of the training of the top management must be also in compliance with the Competence Profile of the job.

The training of internal trainers aims both at improving the expertise, in particular according to trainer's specialisation, and at enhancing the level the “soft” skills, especially via new legislation in the scope of activity of the SÚJB and communication skills. For graduates of internal trainer course, the next training should be initiated after five years from the completion of special course.

#### *5.2.1.7 Performance of evaluation*

All SÚJB employees are subject to the performance evaluation system. Part of the work of the head of department is a regular evaluation of performance and fulfilment of IPOR of employees of his/her department.

The purpose and objective of the evaluation are as follows:

- Objective assessment of professional qualities of an employee and recognition of the current level of his/her performance which serve as a basis for the further development and career progression of an employee,
- Recognition of employee motivation to fulfil SÚJB's tasks as set out by the relevant legal regulations and their implementing regulations,
- Improving communication and feedback (superior – subordinate),
- Obtaining information about the employee's approach to his/her professional development and preparation for defining other development activities in IPOR.

## **6 Article 8: Information to the public**

### **6.1 Legal requirements for making information available to the public and workers on the regulation of nuclear safety**

#### **6.1.1 Act No. 106/1999 Coll., on Free Access to Information**

Act No. 106/1999 Coll., on Free Access to Information, as amended, (herein referred to as “the Act”) is the basis for making information available to the public and workers. It sets the rules for the provision of information and further regulates the terms of the right to free access to information. The Act has been incorporated in an internal document (regulation) of the SÚJB.

As per the Act, all bodies of the state administration including the SÚJB (“legally bound persons”) have the duty to provide information related to their competencies (information means any contents or their part in any form recorded on any medium, particularly the contents of a written record on a document, record stored electronically or an audio, visual or audio-visual record; a computer program is not considered information).

The legally bound persons provide information to an applicant (i.e. any person and legal entity requesting information) following his/her request or by disclosure.

Pursuant to the Act, the SÚJB is obliged to publish the following information at a publicly accessible place at its seat and offices and is obliged to enable making copies of them:

- reason and the way of establishing the SÚJB including the conditions and principles under which it operates,
- description of its organizational structure, the place and the way of obtaining relevant information, where to submit a request or file a complaint, submit a proposal, instigation or any other request or where to receive the decision on the persons’ rights and duties,
- place, time for compliance with the request, and the way, where to seek a remedial measure against the decision of the SÚJB on the rights and duties of persons including the explicit list of requirements put on the applicants in this respect, as well as the description of procedures and rules, which are necessary to comply with during these activities, and description of the relevant form and the way and place where such a form can be obtained,
- procedure the SÚJB is obliged to comply with when disposing of the requests, proposals or other requests by citizens, including the relevant times that are necessary to observe,
- list of the most important regulations, according to which the SÚJB particularly acts and makes decisions, which set the right to request information and to provide information, and which regulate further citizens’ rights in relation to the SÚJB including the information where and when the regulations are provided for inspection,
- fees for providing information,
- annual report on its activity in communicating information in the previous calendar year,
- exclusive licenses (the SÚJB may grant an exclusive license only if it is indispensable for further dissemination of information and if it is in public interest),
- a superior body’s resolution on the fees (in connection with complaints against the fee)
- address of the electronic registry.

#### **6.1.2 Act No. 123/1998 Coll., on Access to Information on the Environment**

Act No. 123/1998 Coll., on Access to Information on the Environment, as amended, stipulates namely:

- the conditions of exercising the right to timely and complete information on the state of the environment and natural resources, such as is available to state administration authorities, municipal authorities and juridical persons established, controlled or charged by them;
- public access to the information on the state of the environment and natural resources which these authorities have at their disposal and specifies the basic conditions under which access to information is provided.

### **6.1.3 Atomic Act**

The Atomic Act lays down following SÚJB obligations concerning of information policy:

- to provide information to municipalities and Regional Authorities concerning radioactive waste management within their territory of administration;
- to control the activity of the National Radiation Monitoring Network, the functions and organisation of which shall be set out in an implementing legal regulation, and provide information on the radiation situation to the public and ensure international exchange of it;
- to provide, based on assessment of a radiation situation, information necessary to take decisions aimed at reducing or averting exposure in the case of a radiation accident;
- to communicate within its sphere of competence required information to the International Atomic Energy Agency and to the European Commission or, if applicable, to other bodies of the European Union;
- to give out information according to special legal provisions (Act No. 123/1998 Coll., on the right on information about the environment) and once a year to publish a report on its activities and submit it to the Government and to the public.

Pursuant to the Atomic Act (Art. 17 para 1 lettre k)), licence holders are obliged to provide the public with information on the maintenance of nuclear safety and radiation protection which is not subject to State, professional or commercial secrecy.

### **6.1.4 International Aspects**

The Czech Republic is party to the Convention on access to information, public participation in decision-making and access to justice in environmental matters ("Aarhus Convention") and, among others, the Convention on Early Notification of a Nuclear Accident.

The Czech Republic has also concluded intergovernmental agreements on the exchange of information on nuclear incidents/accidents and other nuclear-related issues with all neighbouring countries (Austria, Germany, Slovakia and Poland), and Hungary. As regards information provided to Austria, there is also a special "hot-line" for providing information on events at NPP Temelín (established within the "Melk Protocol"). The Czech Republic has also concluded a number of agreements on cooperation in peaceful uses of nuclear energy and transfer of related information with other countries (US, Russian federation, Canada, Republic of Korea, Ukraine, Bulgaria, India and Australia).

The SÚJB has concluded arrangements with partner regulators on the exchange of nuclear safety-related information (with Slovak Nuclear Regulatory Authority ÚJD, Nuclear Safety Authority of Finland - STUK, the Atomic Energy Council of the Republic of China (Taiwan), Supervision of Russia for Nuclear Safety and Radiation Protection, the US Nuclear Regulatory Commission, Canadian Nuclear Safety Commission, State Nuclear Regulation Committee of Ukraine, Hungarian Atomic Energy Authority and Slovenian Nuclear Safety Administration).

## 6.2 Communication Strategy

### 6.2.1 Communication of the SÚJB

The Annual Report of the SÚJB is an important document, which the SÚJB submits to the Government and to the public on an annual basis. The report contains a very detailed summary of SÚJB activity in the past year. It summarises the results of analytical and inspection activity in all specialisations of SÚJB activity (nuclear safety, radiation protection, emergency preparedness, nuclear safeguards) and describes major events (failures, safety-related events, exercises, issued licences, etc.). It also summarises foreign activities of the SÚJB and provides basic budget information from the past year and information on human resources. The Annual Report of the SÚJB includes a detailed report on radiation situation in the Czech Republic for the last year. Due to the nature of the Annual Report of the SÚJB, the information is provided in a selective manner, after subjective consideration of the Office management.

As in case of others regulatory authorities, the Internet is a vital tool for SÚJB communication. In addition to the basic Czech version of the website, the SÚJB operates a limited English mutation. The Office presents the following information on the website:

- Basic information on the Office, contacts, vacancies, important links
- Issued licences
- Electronic public noticeboard
- Legislation, including all regulations
- Other documents and publications of SÚJB
- Information from individual fields of SÚJB competence such as:
  - Nuclear safety
  - Radiation protection
  - Radiation situation monitoring
  - Emergency preparedness
  - Non-proliferation of nuclear, chemical and biological weapons
  - Radon
- Information on selected events/activities (e.g. stress tests, emergency exercises, waste management, operation of nuclear power plants, seismic situation monitoring, radiation situation monitoring, etc.)
- News

For major events as was the Fukushima accident, the SÚJB set up operationally a special website where the public could ask anything relating to this event. SÚJB experts as well as external persons answered here most of the questions asked in a relatively short time. This website had a great resonance in the general as well as professional public.

However, Internet and annual report are not the only tools for SÚJB communication.

The Office often cooperates with media. Whenever anything is topical, the chairperson or officials of the Office are asked by national media (television, radio, printed newspapers, Internet) for information. In case of events as Fukushima, commissioning of new NPP units, North Korean nuclear explosions, etc., the representatives of the SÚJB are invited to television/radio/Internet debates within larger media campaigns.

To achieve the highest awareness or transparency possible, the SÚJB attends public hearings in justified cases. Public hearings organised in the Czech Republic and in the surrounding countries during 2011 and 2012 within the EIA study evaluation process for Temelín Unit 3 and 4 can be mentioned as an example. In exceptional cases, where appropriate, public hearings (public seminars) are organised by the Office itself. In recent years, the public hearing on the results of stress tests or quality of welds of the primary circuit of Temelín power plant units can be mentioned.

The SÚJB also regards schools as very important partners in explaining the importance of providing the highest level of nuclear safety and radiation protection. Close cooperation in this respect is with universities. The chairperson and some other workers of the SÚJB lecture to students in the relevant fields on the topics of nuclear safety, radiation protection or non-proliferation of weapons of mass destruction.

Information, which would be submitted by the SÚJB to the government, regional authorities and to the public in case of emergency, is a special category (see above).

Regular cooperation with the regulatory authorities of surrounding countries contributes to informing the public in the neighbouring countries. Intergovernmental agreements govern the area of provision of information for all four neighbouring countries, both for the category of emergency management and for the category of standard exchange of information for the area of utilisation of nuclear energy and ionising radiation.

Since the 1990s the bilateral cooperation between the SÚJB and the Austrian competent authority in the field of emergency preparation and response (EPR) has been extended. Based on bilateral agreements, the following arrangements have been established: early warning of the neighbouring state, in addition to international early notification obligations (IAEA, EC); information on small events/incidents (including events at Temelín NPP); provision of information on source term and plant status of Temelín and Dukovany NPP; exchange of measurement data of the automatic monitoring networks; monthly tests of data exchange system (ESTE data); yearly bilateral exercise with ESTE data exchange; Austrian participation as observer in the exercises at NPPs Temelín and Dukovany; yearly bilateral expert meetings on exchange of information in the field of radiation protection, EPR and nuclear safety. As a result, in case of nuclear accidents at NPPs Temelín and Dukovany Austria has in principle the same information relevant for off-site EPR as the Czech Republic.

### **6.2.2 Communication strategy of licence holders**

All nuclear installation operators regularly inform public about their activities concerning nuclear safety and radiation protection on their websites and annual reports. Besides it, ČEZ, a. s., as an operator of Dukovany and Temelín NPP has establish communication strategy based on “friendly and mutually beneficial” relationships with the towns, municipalities and population in the vicinity of the power plants. Information centres of the NPP Dukovany and NPP Temelín, located in the immediate neighbourhood of NPPs, visite more than 25 000 per year.

### **6.3 Providing information in emergency situations**

Standard contact with the media is represented by the SÚJB Chairperson. However, if an event involving a substantial increase of demand for information (or possibly interviews) from the public and media occurs (discovery of an orphan source, an event/accident etc.), an ad-hoc spokesperson or a special contact point (an expert with no special training in communication with the public and media) is appointed by the Chairperson. He/she is then made available for both the public and media, and appropriate steps are taken so that he/she receives information needed to perform his/her duties. During emergencies, a special team is also established within the SÚJB, and charged with communication with the general public via web pages, phone and also with the media if needed. The team also prepares background material for the highest management of the SÚJB and the Czech Government.

In case of the Fukushima Daiichi accident, also the TSOs made their staff available to support the regulatory authority – for example the National Radiation Protection Institute (SÚRO) made one expert fully available for the Czech Embassy in Tokyo (he was helping the Embassy to interpret the

information released by the Japanese side, evaluate the risks, provide SÚRO's own analyses, predictions etc.). Also the Research Center at Řež, together with the SÚJB, contributed to the communication in this extreme situation – by establishing two new interactive platforms for information sharing = “Fukushima for You” and “Stress Tests”. A number of experts from both institutions participated in responding to questions from the general public (see the “Fukushima Daiichi Experience” below).

Basic rules for exchange/transfer of information in case of emergency are contained in the internal document (regulation) of the the SÚJB on performing the function of the Contact Point for Emergency and the Communication strategy of the SÚJB.

The basic communication rules were proved during the emergency exercise “ZÓNA”:

- Press releases were issued by spokespersons of individual exercising entities on a coordinated and regular basis, and are submitted to the press officer of the Ministry of Interior – General Directorate of Fire Rescue Service of the Czech Republic;
- An information helpline was established for the public, which is operated by trained members of the Fire Rescue Service of the Czech Republic;
- Each exercising entity issued information (for the public, media) only within its competences and informs on its activities;
- Each exercising entity hold its own press conferences;
- Each exercising entity informed on its activity in addressing an extraordinary event on its website.

During last two “ZÓNA” exercises, the SÚJB reported additionally on its website and facebook on activities carried out by its exercising crisis staff.

### **6.3.1 Provision of Information and Instructions to the Public**

In general, system used for communication with the public and media has to ensure rapid and accurate evaluation of information, prepare outputs, and deliver such outputs quickly and correctly to the public and to the media. This prevents the public and media from receiving incorrect and distorted information. The system used for communication with the public and media is also regularly tested during exercises at all levels. At all levels of crisis management, the system used for communication with the public and media forms a part of crisis and relevant emergency plans.

The system used for informing the population is tested in both emergency planning zones during regular exercises.

#### *6.3.1.1 Government Level*

Information on extraordinary events that required the activation of the Central Crisis Staff is provided by its professional working group – the Media Group. The head of the Media Group is an authorised employee of the Ministry, whose Minister is the Chairman of the Central Crisis Staff and members are authorised workers of offices, whose representatives are members of the Central Crisis Staff. The Media Group provides the following services to the Central Crisis Staff, in particular:

- Monitoring and information analysis in the course of event development,
- Collection, processing, sorting and delivery of information,
- Collected information analysis and preparation of details for information outputs,
- Information and organisational links to the Office of the Government – Secretariat of the National Security Council, to crisis staffs of the ministries, other central administration offices, administrative offices with national competences, and to regional crisis staffs.

#### *6.3.1.2 Central Administration Offices*

The central administration offices, through their spokespersons, inform the public, or set up their media groups for this purpose. For example: Ministry of Interior – General Directorate of the Fire

Rescue Service of the Czech Republic - sets up a workplace for communications with the public in case of an extraordinary event. This workplace is staffed by trained personnel in communications and equipped with several telephone lines and internet access.

Each central administration office is responsible for its own information campaign, i.e. publishes its own press releases, holds press conferences, and publishes printed documents containing information for the public and media. Pursuant to Atomic Act., the SÚJB is obliged to provide information relating to its competence, i.e. the SÚJB is obliged to provide information both on radiation protection in the case of the occurrence of extraordinary radiation events, and on the origination thereof. The SÚJB presents the information, for example, on its website, in its annual reports or ad hoc, as currently needed. The SÚJB also publishes press releases and answers questions from the public. During the Fukushima accident, a special website was created for this event: <http://otazky-fukusima.cvrez.cz>. Since 2012, the SÚJB has also had its own facebook profile.

#### *6.3.1.3 Regional Offices and Municipalities with Extended Competences*

The regional offices and the municipalities with extended competences inform the public through their spokespersons, or set up their media groups and workplaces for public communication. These workplaces are staffed by trained personnel in communications and equipped with several telephone lines and internet access. Each regional office and each municipality with extended competences are responsible for their own information campaign, i.e. publishing their own press releases, holding press conferences, or publishing printed documents containing information for the public and media. The components of the Integrated Rescue System provide the necessary information with respect to an extraordinary event and to rescue and remedy works in progress to the media and to the public.

#### *6.3.1.4 NPP Operator*

The NPP operator informs the public through its spokesperson, publishes its own press releases, holds press conferences, and publishes printed documents containing information for the public and media. The NPP operator sets up a media group as part of the emergency staff. Pursuant to Government Regulation No. 11/1999 Coll., the NPP operator is obliged to ensure press and information campaign for population preparedness (i.e. issue of the Population Protection Manual, training for representatives of local authorities). The Population Protection Manual is issued in the form of a calendar, is updated once every two years, and is distributed to all inhabitants within the emergency planning zone. The manuals contain information on how the inhabitants should proceed after a warning in the emergency planning zone in the case of needed sheltering, application of iodine prophylaxis and on the announcement of preparation for evacuation. Among other things, the manual uses graphic representations and figures to make this information attractive and understandable. The NPP operator, local bodies of crisis management, Ministry of Interior – General Directorate of Fire Rescue Service of the Czech Republic and the SÚJB cooperate during the process of creation and update of the Population Protection Manual.

#### *6.3.1.5 Population Warning in the Emergency Planning Zone*

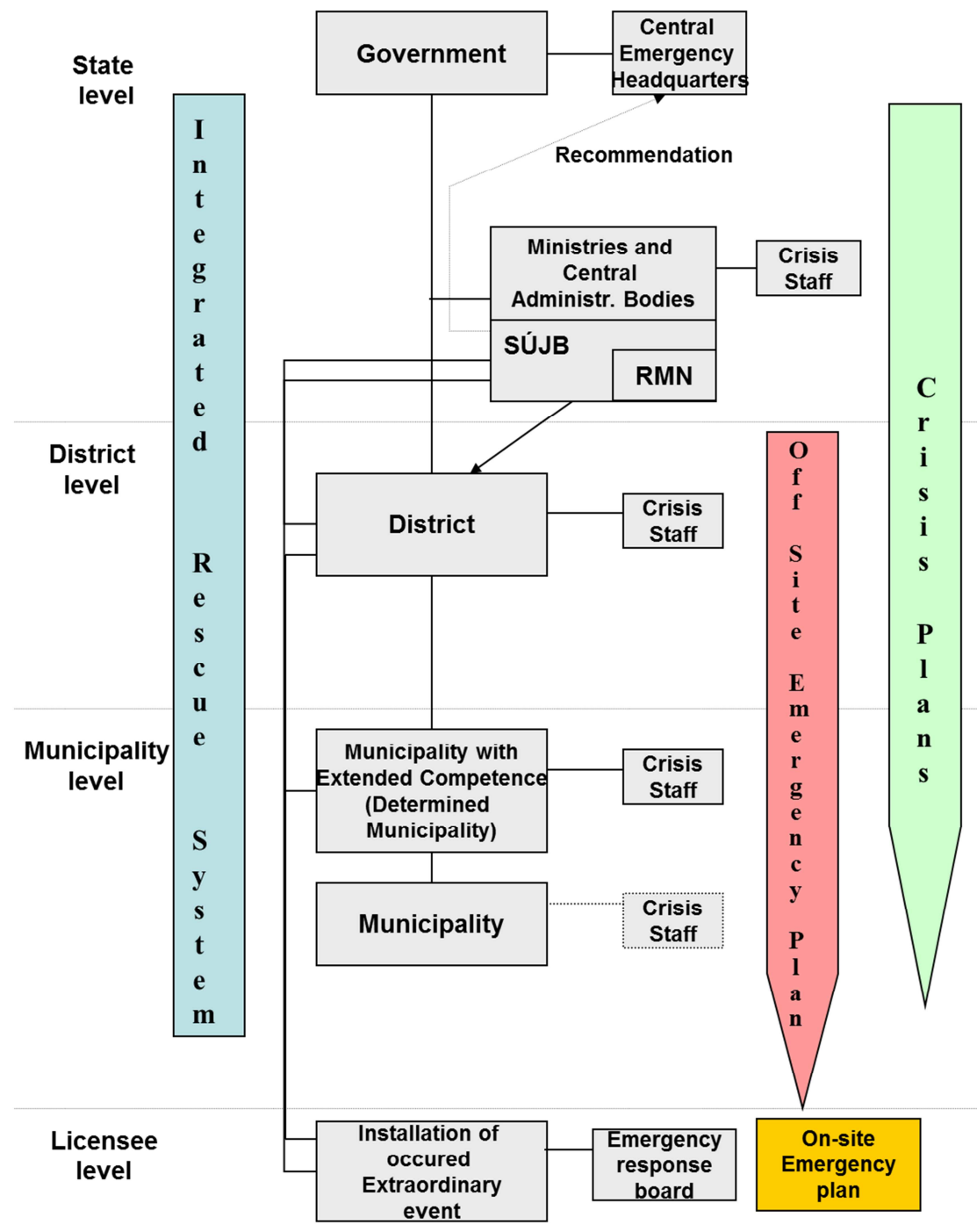
When an extraordinary event of degree three is announced, the NPP operator is obliged to ensure the warning of the population in the emergency planning zone, namely via terminal elements of warning and other technical and organisational measures (mainly radio and television broadcasting with preliminarily prepared records). The Fire Rescue Service of the Czech Republic ensures and operates a uniform warning and notification system that ensures the warning and notification. The municipal office informs legal and natural persons in the municipality about the nature of the potential threat, about the prepared rescue and remedy works, and about the protection of the population. In the implementation of rescue and remedy works, the mayor of the municipality ensures the warning of persons situated on the territory of the municipality against the imminent threat. The Operation Information Centres of the Integrated Rescue System are authorised to warn the population on the affected territory in the event of danger of delay. At the time of the announced crisis situation, the mayor of the municipality ensures the warning and information of

persons situated on the territory of the municipality against imminent danger, and the notification of crisis management bodies, unless already made by the Regional Fire Rescue Service. The uniform warning and notification system is technically, operationally and organisationally ensured by notification centres, telecommunication networks and terminal elements of warning and notification, by means of which the population is immediately provided with emergency information. A siren test is carried out in the Czech Republic at 12:00 noon every 1st Wednesday of the calendar month.

#### *6.3.1.6 Warning and Information in the Case of the Occurrence of a Radiation Accident*

In the case of the occurrence of a radiation accident, warning the population is the primary measure. The population is primarily warned through the "General Alert" warning signal. The signal is sounded by a warble tone siren during 140 seconds and can sound three consecutive times at approximately three-minute intervals. The signal is activated by the Fire Rescue Service of the Czech Republic on request of the shift engineer of the operator of a nuclear installation. The signal is immediately followed by spoken emergency information notifying the population of the data on the imminent or occurred extraordinary event and of the measures for protection of population. The provision of such emergency information is performed through the end warning elements, fitted with the module for transmission of voice information. The warning signal indicates a general danger. Other specific information on danger and protection mode will be communicated to the population immediately via radio (Czech Radio) and television (Czech Television), local radio, vehicles of the components of the Integrated Rescue System, or other available method.





Basic scheme of the structure of emergency response of the Czech Republic for the case of the occurrence of radiation accident

## 6.4 Restrictions on the Right to Information in Providing Information

### 6.4.1 Act No. 106/1999 Coll., on Free Access to Information

As per Act No. 106/1999 Coll., on Free Access to Information, the duty to provide information shall not apply to requests regarding opinions, future decisions and the creation of new information. It also does not apply to providing information subject to industrial ownership and other information as long as a special law regulates providing of such information, particularly disposing of requests

including their elements and the way of submitting the requests, deadlines, remedial measures and the way of providing the information.

All bodies of the state administration including the SÚJB, may also restrict the provision of information if:

- the information relates exclusively to the internal instructions and personnel by-laws, or
- it is new information, which came into being during the preparation of the decision by the SÚJB unless it is otherwise requested by law; this applies until the preparation ends with a decision
- it is an information which originated without using the public funds, and has been handed over by an individual who the law does not impose such duty on unless he/she has stated he/she agrees with providing the information,
- the protection of third persons toward the subject-matter of the Act No. 121/2000 Coll., on Copyright and rights related to copyright
- represents a trade secret (Act No.89/2012 Civil Code),
- it is described as classified information in accordance with the legal regulation (Act No. 412/2005 Coll., on the protection of classified information and on security qualification),
- the ongoing criminal proceedings,
- the courts' decision-making activity with the exception of the final judgment,
- the performance of duty of the intelligence service (Act No. 153/1994 Coll., on intelligence service),
- the preparation, course and the discussion on the results of the inspection in the Supreme Audit Office's bodies,
- the activity of the relevant organizational unit of the Ministry of Finance under a special legal regulation (Act No. 61/1996 Coll., on some measures against the legalization of proceeds of crime and on amendments to related laws)
- it is information on property owned by an individual who is not a legally bound person, acquired by virtue of laws on taxes, fees, pension scheme, health and social insurance.
- it is information that the SÚJB has acquired from a third person when performing the tasks as part of the control, supervisory, inspecting or similar activities under a special regulation according to which the pledge of confidentiality or a different procedure protecting the information from disclosure or misuse applies.

The SÚJB shall carry out all the restrictions of the right to information so that it shall disclose the information requested including the accompanying information after having excluded the information specified by law. The right to deny the information shall continue only as long as the reason for denial persists. In justified cases, the SÚJB verifies whether the reason for denial persists.

## 7 SUMMARY

The National Report of the Czech Republic has been prepared as required under Article 9.1 of the Council Directive 2009/71/EURATOM of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations.

The structure of the National Report is based on recommendations published as "ENSREG Guidelines regarding Member States Reports as required under Article 9.1 of the Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations - HLG\_p (2012-21)\_108".

The Czech Republic is a member of international organizations dealing with nuclear matters (e.g. IAEA, NEA/OECD) and is a part of relevant international conventions, esp. Nuclear Safety Convention and Joint Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Under these convention's regime, it regularly reports about the nuclear installations operated in the Czech Republic every three years. National reports describing all nuclear installations, including approaches to ensure of their nuclear safety and radiation protection of the staff and public during whole life cycle of them, were published.

At the request of the Government of the Czech Republic, an international team of senior safety experts met representatives of the SÚJB from 18 to 29 November 2013 to conduct an Integrated Regulatory Review Service (IRRS) mission. The purpose of the peer review was to review the Czech regulatory framework for nuclear and radiation safety. As recommended by the IAEA Nuclear Safety Action Plan, special attention was given to regulatory implications for nuclear safety in the Czech Republic in the light of the TEPCO-Fukushima Dai-ichi accident. The IRRS review team identified a number of good practices and made recommendations and suggestions for improvements to enhance the effectiveness of the regulatory framework and functions in line with the IAEA Safety Standards. The IRRS Team recognized that the IRRS findings broadly correlated with the action plan prepared by the SÚJB as a result of the self-assessment.

The IRRS review team made the following general observations:

- the Czech regulatory system for nuclear and radiation safety is robust;
- the SÚJB is an effective and independent regulatory body;
- the Czech Republic actively participates in the global safety regime;
- the SÚJB benefits from experienced, technically competent and well-motivated staff.

The National Report demonstrates, in the view of the Czech Republic, the full compliance with all requirements of the Council Directive 2009/71/Euratom.

## 8 Annex 1 - List of Legislation

### 8.1.1 Atomic Act and Related Implementing regulations

**Act No. 18/1997 Coll.**, on the peaceful utilisation of nuclear energy and ionising radiation (**the Atomic Act**) and on Amendments and Alterations to Some Acts as amended by Act No. 83/1998 Coll., Act No. 71/2000 Coll., Act No. 132/2000 Coll., Act No. 13/2002 Coll., Act No. 310/2002 Coll., Act No. 320/2002 Coll., Act No. 279/2003 Coll., Act No. 186/2004 Coll., Act No. 1/2005 Coll., Act No. 253/2005 Coll., Act No. 413/2005 Coll., Act No. 186/2006 Coll., Act No. 342/2006 Coll., Act No. 296/2007 Coll., Act No. 124/2008 Coll., Act No. 189/2008 Coll., Act No. 247/2008 Coll., Act No. 158/2009 Coll., Act No. 223/2009 Coll., Act No. 227/2009 Coll., Act No. 249/2011 Coll., Act No. 250/2011 Coll., Act No. 375/2011 Coll., Act No. 350/2012 Coll. and Act No. 64/2014 Coll.

- SÚJB Decree No. 144/1997 Coll., on the physical protection of nuclear materials and nuclear facilities and their classification, as amended by SÚJB Decree No. 500/2005 Coll.;
- SÚJB Decree No. 146/1997 Coll., specifying activities directly affecting nuclear safety and activities especially important from radiation protection viewpoint, requirements on qualification and personnel training, on methods to be used for verification of special professional competency and for issue authorisations to selected personnel, and the form of documentation to be approved for the licensing of expert training of selected personnel, as amended by SÚJB Decree No. 315/2002 Coll.;
- SÚJB Decree No. 215/1997 Coll., on criteria for siting of nuclear installations and very significant ionizing radiation sources;
- SÚJB Decree No. 106/1998 Coll., on nuclear safety and radiation protection assurance during commissioning and operation of nuclear facilities;
- Government Regulation No. 11/1999 Coll., on emergency planning zones;
- SÚJB Decree No. 195/1999 Coll., on basic design criteria for nuclear installations with respect to nuclear safety radiation protection and emergency preparedness;
- SÚJB Decree No. 307/2002 Coll., on radiation protection, as amended by SÚJB Decree No. 499/2005 Coll. and SÚJB Decree No. 389/2012 Coll.;
- SÚJB Decree No. 317/2002 Coll., on type-approval of packagings for shipment, storage and disposal of nuclear materials and radioactive substances, on type-approval of ionizing radiation sources and shipment of nuclear material and specified radioactive substances (on type-approval and shipment), as amended by SÚJB Decree No. 317/2002 Coll. and SÚJB Decree No. 77/2009 Coll.;
- SÚJB Decree No. 318/2002 Coll., on details of emergency preparedness of nuclear facilities and workplaces with ionizing radiation sources and on requirements on the content of on-site emergency plan and emergency rule, as amended by SÚJB Decree No. 2/2004 Coll.;
- SÚJB Decree No. 319/2002 Coll., on function and organization of the National Radiation Monitoring Network, as amended by SÚJB Decree No. 27/2006 Coll.;
- SÚJB Decree No. 360/2002 Coll., establishing a method to create a financial reserve for decommissioning of nuclear installations or workplaces in categories III or IV;
- Government Regulation No. 416/2002 Coll., on the amount and terms of payments to the nuclear account by radioactive waste producers and the annual subsidy to the communities and the rules for its payment, as amended by Government Regulation No. 46/2005 Coll., Government Regulation No. 341/2009 Coll. and Government Regulation No. 461/2011 Coll.;
- SÚJB Decree No. 419/2002 Coll., on personal radiation passes;
- SÚJB Decree No. 185/2003 Coll., on the decommissioning of nuclear installations or workplaces of category III or IV;

- SÚJB Decree No. 193/2005 Coll., sets the list of theoretical and practical areas forming the education and preparation content required in the Czech Republic for the performance of regulated activities belonging to the competence of the SÚJB;
- SÚJB Decree No. 309/2005 Coll., on assurance of technical safety of selected equipment;
- SÚJB Decree No. 461/2005 Coll., on the procedure for providing subsidies intended for the introduction of measures leading to a reduction of indoor exposure to natural radionuclides and a reduction of natural radionuclide concentration in drinking water appointed for public supply;
- SÚJB Decree No. 462/2005 Coll., on the distribution and collection of detectors intended for identification of buildings with an increased level of exposure to natural radionuclides and on conditions for acquirement of state budget subsidy;
- SÚJB Decree No. 132/2008 Coll., on a Quality Assurance System in carrying out activities connected with utilization of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard their assignment to classes of nuclear safety;
- Government Regulation No. 73/2009 Coll., on information exchange related to the international transport of radioactive waste and spent fuel;
- SÚJB Decree No. 165/2009 Coll., establishing a list of Trigger list items;
- SÚJB Decree No. 166/2009 Coll., establishing a list of selected items of dual use in the nuclear area;
- SÚJB Decree No. 213/2010 Coll., on accounting for and control of nuclear material and on reporting of data required by EC regulations;
- Government Regulation No. 399/2011 Coll., on fees for professional activities of the State Office for Nuclear Safety;

### **8.1.2 Multilateral international treaties and treaties with IAEA**

Part of the valid Czech legislation in the given area includes the following international treaties signed by the Czech Republic (or the former Czechoslovak Socialist Republic and later the Czech and Slovak Federal Republic):

- The Convention on the Physical Protection of Nuclear Materials (in Vienna on October 26, 1979, communication of the MZV No. 27/2007 Coll.),
- The Convention on Early Notification of a Nuclear Accident (in Vienna on September 26, 1986, communication of the MZV No. 116/1996 Coll.),
- The Convention on Assistance in the Case of a Nuclear or Radiation Accident (in Vienna on September 26, 1986, communication of the MZV No. 115/1998 Coll.),
- Nuclear Safety Convention (in Vienna on June 17, 1994, communication of the MZV No. 67/1998 Coll.),
- Vienna Convention on Civil Liability for Nuclear Damage (in Vienna on May 21, 1963, ratified, communication of the MZV No. 133/1994 Coll.),
- The Joint Protocol relating to the Application of the Vienna and Paris Conventions on Liability for Nuclear Damage (in Vienna in 1988, ratified, communication of the MZV No. 133/1994 Coll.),
- The Protocol on Amendment to the Vienna Convention on Civil Liability for Nuclear Damage (in Vienna on September 12, 1997, signed by the Czech Republic on June 18, 1998, however has not been ratified as yet). By virtue of Act No. 158/2009 Coll., the Czech Republic adapted the amount of liability of the operators and state guarantees to this protocol,
- The Comprehensive Nuclear Test Ban Treaty (has not become valid as yet, the Czech Republic's Government Order No. 535/1996),
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radiological Waste Management (in Vienna on September 5, 1997, UV No. 593/1997, ratified on March 26, 1999),
- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (Decree by the MZV No. 61/1974 Coll., of March 29, 1974),

- The Convention on Supplementary Compensation for Nuclear Damage (in Vienna on September 12, 1997, the Government Order No. 97/1998, signed by the Czech Republic, however has not been ratified),
- The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, February 25, 1991, ratified on February 26, 1991, Decree by the MZV No. 91/2001 Coll.),
- The Convention on Korean Energetics Development Organization (KEDO) – letter of the MZV on acceptance of the Agreement of March 9, 1995 and of the supplemental Protocol of 1997 by the Czech Republic dated January 27, 1999; the Czech Republic became a member on February 9, 1999,
- The Agreement between the Czech Republic and the International Atomic Energy Agency on Safeguards, based on the Treaty on Non-proliferation of Nuclear Weapons (in Vienna on September 18, 1996, through communication of the MZV No. 68/1998 Coll.),
- The Supplemental Protocol to the Agreement between the Czech Republic and the International Atomic Energy Agency on Safeguards, based on the Treaty on Non-proliferation of Nuclear Weapons (in Vienna on September 28, 1999, through communication of the MZV No. 74/2003 Coll.),
- Adapted supplemental Agreement on Technical Assistance provided by the International Atomic Energy Agency to Government of the Czech and Slovak Federal Republic (in Vienna on September 20, 1990, No. 509/1990 Coll.).

### **8.1.3 Legislative acts regulating activities relating to nuclear safety and radiation protection**

- Act No. 106/1999 Coll., on free access to information, as amended,
- Act No. 123/1998 Coll., on the right to information on environment, as amended,
- Act No. 594/2004 Coll., implementing the regime of the European Communities to control the export of dual use goods and technologies, as amended,
- Act No. 100/2001 Coll., on assessment of impact on the environment, as amended,
- Act No. 111/1994 Coll., on road traffic, as amended,
- Act No. 255/2012 Coll., on Inspection
- Act No. 183/2006 Coll., on Spatial Planning and Building Rules, as amended,
- Act No. 500/2004 Coll., on administrative procedure, as amended,
- Government Regulation No. 341/2009 Coll., about the amount of payment and transfer to the nuclear account by radioactive waste producers and about the annual subsidy to the communities and the rules for its takedown.
- Act No. 412/2005 Coll., on classified information protection and on security competence, as amended.
- Act No. 505/1990 Coll., on Metrology, as amended;

### **8.1.4 Emergency Legislation acts**

- Constitutional Act No. 110/1998 Coll., on Security of the Czech Republic, as amended,
- Act No. 239/2000 Coll., on Integrated Rescue System and on Amendment to Certain Related Acts, as amended,
- Act No. 240/2000 Coll., on Crisis Management and on Amendment to Certain Related Acts, as amended,
- Act No. 241/2000 Coll., on Economic Measures for Crisis Situations and on Amendment to Certain Related Acts, as amended,
- Act No. 133/1985 Coll., on Fire Protection, as amended,

- Government Regulation No. 462/2000 Coll., on Implementation of Some Provisions of the Crisis Act, as amended,
- Government Regulation No. 463/2000 Coll., on Setting the Rules for Participation in International Rescue Operations, Granting and Receiving Humanitarian Aid, and Reimbursement of Expenses Incurred by Legal Persons and Natural Persons Pursuing Business Activities for Protection of Inhabitants, as amended,
- Government Regulation No. 465/2008 Coll., on Calling in the Troops of the Armed Forces of the Czech Republic to Fulfil the Tasks of the Police of the Czech Republic in Radiation Accidents at Nuclear Power Plants,
- Government No. 431/2010 Coll. amending Government Decree No. 462/2000 Coll. to implement § 27 paragraph 8 and § 28 paragraph 5 of Act No. 240/2000 Coll., on crisis management and amending certain acts (Crisis Act), as amended,
- Government Regulation No. 432/2010 Coll., on Criteria for Defining Critical Infrastructure Elements,
- Decree of the Ministry of Interior No. 328/2001 Coll., on Some Details of the Security of the Integrated Rescue System, as amended,
- Decree of the Ministry of Interior No. 247/2001 Coll., on the Organisation and Operation of Fire Protection, as amended,
- Decree of the Ministry of Interior No. 380/2002 Coll., on the Preparation and Fulfilment of Tasks to Protect the Population

## 9 ANNEX 2 References

[1] The Czech Republic National Report under the Convention on Nuclear Safety, SÚJB, 2013

[2] National Report of the Czech Republic under the Joint Convention on Safety in SF Management and Safety in RAW Management, SÚJB, 2011

[3] National Report of the Czech Republic on Emergency Preparedness and reponse, SÚJB, 2014.

[4] The Czech Republic Extraordinary National Report under the Convention on Nuclear Safety, SÚJB, 2012

[5] Integrated Regulatory Review Service (IRRS) mission to the Czech Republic, IAEA, November 2013

[6] National Report on “Stress tests” NPP Dukovany and NPP Temelín, Czech Republic, Evaluation of Safety and Safety Margins in the light of the accident of the NPP Fukushima, Rev. 1, March 2012

References [1], [2], [3] and [4] are available at SÚJB web pages : <http://www.sujb.cz/en/reports/>

[5] is available at the SÚJB web pages :

[http://www.sujb.cz/fileadmin/sujb/docs/zpravy/IRRS\\_Czech\\_Republic\\_Final\\_Report.pdf](http://www.sujb.cz/fileadmin/sujb/docs/zpravy/IRRS_Czech_Republic_Final_Report.pdf)

[6] is available at SÚJB web pages :

[https://www.sujb.cz/fileadmin/sujb/docs/dokumenty/National\\_Report\\_Revision\\_1\\_for\\_web\\_1.pdf](https://www.sujb.cz/fileadmin/sujb/docs/dokumenty/National_Report_Revision_1_for_web_1.pdf)