

REPORT ON SÚJB RESULTS ACHIEVED IN THE SURVEILLANCE OF
NUCLEAR FACILITIES
AND RADIATION PROTECTION
FOR 2005

PART I

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1. STATE OFFICE FOR NUCLEAR SAFETY

1.1. Information on the Office's Position and Sphere of its Authority

The State Office for Nuclear Safety (hereinafter SÚJB or Office) is a central state administration agency independently budgeted. The Office is headed by a chairperson appointed by the Government of the Czech Republic.

SÚJB performs state-governed administration and surveillance of the use of nuclear power and ionizing radiation, and it covers the area of radiation protection and the area of non-proliferation of nuclear weapons and observance of the prohibition of chemical, bacteriological and toxin weapons. The Office's sphere of authority, granted by Act No. 18/1997 Coll., on the peaceful utilization of nuclear energy and ionizing radiation (hereinafter "Atomic Act"), Act No. 19/1997 Coll., on some measures related to the prohibition of chemical weapons, and Act No. 281/2002 Coll., on some measures related to the prohibition of bacteriological (biological) and toxin weapons, encompasses particularly:

- Performing state-governed surveillance of nuclear safety, nuclear items, engineered safety features employed in order to ensure physical protection of nuclear facilities, radiation protection and emergency preparedness within nuclear facilities or premises using sources of ionizing radiation;
- Licensing activities conducted pursuant to Act No. 18/1997 Coll., such as locating and operating nuclear facilities and premises using major sources of ionizing radiation; handling ionizing radiation sources and radioactive waste; shipping nuclear materials and radionuclide radiation sources;
- Approving nuclear and radiation protection related documentation as stipulated in the Atomic Act; Limits and Conditions included in the Technical Specifications, methods of physical protection implementation, emergency rules used to govern the transportation of nuclear materials and some selected radionuclide radiation sources, on-site emergency plans for nuclear facilities and premises with sources of ionizing radiation;
- Determining the conditions and requirements for the public protection from radiation as well as the workers engaged in jobs involving sources of ionizing radiation (e.g. the stipulation of exposure limits, the delineation of controlled areas); defining the Emergency Planning Zone and the requirements for emergency preparedness of the License Holders as set forth in the Atomic Act;
- Monitoring the exposure of the public and workers handling sources of ionizing radiation;
- Controlling the activities of the Radiation Monitoring Network within the Czech Republic and taking care of the international exchange of data on the radiation situation;
- Operating the State System of Accounting for and Control of nuclear materials and maintaining the State Registry of License Holders; imported and exported Trigger List items; sources of ionizing radiation and keeping track of the exposure of the public and of workers handling ionizing radiation sources;
- Providing technical cooperation with the International Atomic Energy Agency (IAEA);
- Supplying community authorities and regional municipalities with data on radioactive waste management as related to the territories administered by them; delivering regular reports on the Office's activities to the public and the Czech Government;

- Disseminating information on measurements and reviews of the effects that the nuclear, chemical and biological substances may have on humans and the environment, including the appraisal of the level of protection from such substances that individual and collective protective means offer to humans;
- Coordinating and organizing efforts aimed at dealing with tasks following from the international treaties and governing acts on banning development, production, stockpiling, the use and proliferation of nuclear, chemical, bacteriological (biological) and toxin weapons and on their disposal;
- Ensuring technical safety of selected facilities used in the area of nuclear energy.

1.2. Information on the Office's Competence (Number of Inspectors, Control Regimes, Administration, Personnel Qualification, Training, etc.)

The SÚJB's working positions (total 194) given by systematisation were fully staffed in the course of 2005.

The Nuclear Safety Division employed total of 50 persons, of which 40 are nuclear safety inspectors and 6 are assistant inspectors (involved in the predefined expert preparation process for inspector position); the rest included other employees (e.g. site clerical staff (THP)).

According to systematisation, *the Radiation Protection Division* employed a total of 75 persons, of which 54 are radiation protection inspectors and 3 are assistant inspectors; the rest included other employees.

Within the framework of systematisation, *the independent Emergency Response Center (KKC)* employed total of 5 persons, of which 2 are radiation protection inspectors and one is the nuclear safety inspector.

According to systematisation, *the Department of Nuclear Non-proliferation* employed 19 persons, of which:

- *The Department for Control of the Prohibition of Biological Weapons* employed 5 persons, all in a position as inspector,
- *The Department for Control of the Prohibition of Chemical Weapons* employed 7 persons, including 6 control workers and one THP,
- *The Department of Nuclear Non-proliferation* employed 6 persons, of which 5 are nuclear safety inspectors and one THP.

Other activities (predominantly administrative) related to cover of the SÚJB's running were performed by about one fifth of the personnel. Such activities were focused on both the permanent support of Office's specific competence activities (legislation, international cooperation, safety, EU, internal financial control and audit), and on the execution of regular activities ensured without any particular authority (economy, social sphere, material provision, transportation, etc.).

Four departments of *the Management and Engineering Support Division* ensured the joint activities of the Office:

- *The Office Secretariat* with 12 employees ensured the personal activity, worker education, social sphere, recognition of the qualification within the framework of free movement of persons within EU, departmental research and development program

management, placing of orders, financial control, transportation, property administration, and investment and service activities – mail room, reproduction room, telephone exchange room and filing room;

- **The Economic Department** with 10 employees ensured the utilization of financial means from the SÚJB budget, performed a function of the Office's Financial Department and ensured the accounting, wage administration, settlement of organization's liabilities, inland as well as foreign travel expenses and cash service. It also provided internal management of the Office;
- **The International Cooperation Department** with 6 employees coordinated and fulfilled the concept of participation of the Czech Republic within IAEA, ensured participation and activity of the Czech side in other international organizations operating in the area of peaceful utilization of nuclear energy and in the organizations for the prohibition of chemical and biological weapons, and coordinated Office's participation in the foreign aid projects;
- **The Legal Department** with 4 employees ensured, in cooperation with other divisions and departments, the legislative activity of the Office, prepared legal viewpoints, represented the Office in legal disputes and collected claims.

Personnel Qualification

The qualification pattern of SÚJB personnel remains favourable. The highest number of the total number of 194 employees hold graduate master's degrees (159). There are 11 graduate bachelor's employees. Except for two, other employees received higher technical or secondary technical education. Twenty-five employees received academic degree and four Office's employees were conferred M.B.A (Masters of Business Administration). As confirmed by results of personnel audits carried out in the state administration in 2004, SÚJB was placed among first five in the indicator for the ratio of number of graduate employees to total number of employees.

The age structure of the Office's personnel is indicative of possible generation-related problem in future years. Twenty-three employees aged to 35 years were employed at SÚJB, 36 employees aged between 35 – 45 years, 108 employees aged between 45 – 60 years and 27 employees aged above 60 years. The SÚJB's staffing is quite stabilized; five employees terminated the employment with the Office last year, and except for one, by reason of retirement.

Special personnel training and maintenance of its competency is ensured in accordance with SÚJB internal guideline. The so-called individual personal growth schedule, which is assessed and specified on a regular basis, is used as a basis. The whole process is a combination of general and specialized education of all employees irrespective of position or activity performance. The preparation of personnel in 2005 was primarily focused on daily English language courses, training for new rules of administrative procedure and top management education. Within the framework of induction training provided for inspector-assistants, the basic course focused on nuclear technologies was, on the strength of the trade contract, organized in the Specialized Training Center of the ČEZ, a.s. company in Brno. Other SÚJB inspectors from nuclear power plants completed a special training on full-range simulator of the control system of nuclear power plant in the last year and improved significantly their qualification for their inspection activities.

1.3. Information on Results of the Internal Audit and Internal Financial Control

Information on Results of the Internal Audit

The Internal Audit Department carried out five regular audits and one extraordinary audit in 2005 and participated in one inspection governed by public law. In the last year, the internal audits were focused on the area of file and archive service management, administrative and inspection activities performed by radiation protection inspectors, displacement of surplus and unserviceable property under Office's administration, internal control and test system of the Office, European Union programs PHARE and Transition Facility, and record-keeping for the costs of science and research projects.

The auditors suggested 24 practical system recommendations in his/her reports, and discussed them with the entities under inspection. The recommendations were particularly focused on the area of internal regulations, modifications of the performance procedures for particular activities and Office's internal information system.

The auditor imposed eight remedial measures with a view to improve the quality of internal control system or prevent or mitigate existing risks. The SÚJB management at its meeting placed all inspected entities under an obligation to inform the Office Chairperson within the prescribed time about the scope, character and implementation of remedial measures taken.

During the performance of audits in the year 2005 no significant findings were detected, which would impose an obligation on the Office to act in accordance with Section 22 Paragraph 6 of the Act on Financial Control.

Information on Results of the Internal Financial Control

Financial controls carried out in the year 2005 were primarily focused on observance of the regulations related to internal documentation and guidelines of the Office and subsidiary institutes, financing method for selected fields of SÚJB department activity, economy in expenditures and management of national property.

A total of 17 controls were carried out in the form of monitoring, verification, comparison and analyses in accordance with Act No. 320/2001 Coll., on financial control in the public administration and Decree of the Department of the Treasury of the Czech Republic No. 416/2004 Coll., by means of which the mentioned act is implemented. One of the controls (at the National Radiation Protection Institute) had the character of public control focused on the method of withdrawing the grant earmarked for selected research and development tasks. The controls carried out at the Headquarters of SÚJB and its Regional Centers were primarily focused on management of national property, document flow control, economy in selected expenditure types. In the course of controls no facts that would presume submission of the matter to further proceeding were detected.

Based on controls, examinations, monitoring and findings the financial controller, after meeting with the employees concerned, proposed recommendations to address conditions recognized during the controls. Nine recommendations were implemented out of fifteen proposed recommendations; later date for complete fulfilment and follow-up control are presumed for six recommendations. The fulfilment of proposed recommendations is assessed on the basis of total material discussed at management meeting.

The financial controls carried out in the last year revealed no serious deficiencies that could adversely affect the fulfilment of decisive tasks in ensuring SÚJB approved objectives.

1.4. Economic Indicators

The management of the Chapter 375 – Throughout 2005 the SÚJB followed Act No. 375/2004 Coll., on the Czech State Budget for 2005.

To use its competencies of the chapter, pursuant to the above-mentioned act and its annexes for 2005, the SÚJB was assigned budgeted expenses in total amount of CZK 370,869 thousand and imposed a performance of non-tax budget revenues in the amount of CZK 1,000 thousand. Within the framework of total expenditures of the Chapter, the expenditures on asset reproduction financing were determined in the amount of CZK 76,200 thousand and the staff expenditures and expenditures on other payments for work performed were determined in the amount of CZK 93,438 thousand. Such expenditures within the framework of the Chapter ensured salaries for the activities performed by total of 304 employees (total number of employees at SÚJB department).

In fulfilling its duties, the SÚJB used assets with total value of CZK 967,758 thousand. Material structure of the assets corresponds to Office's mission.

Total review of binding indicators of the approved budget of SÚJB Chapter for 2005 is indicated in Table No. 1.1.

Table No. 1.1

(in "000" CZK, %)

Indicator name	Budget		Reality	% of UR per.
	Approved	Adjusted		
General indicators				
Total non-tax and capital revenues and funds received	1 000	1 000	2 975	297,5
Revenues from social security contributions and national insurance contribution				
Total expenditures	370 869	384 584	385 153	100,1
Individual partial indicators for expenditures				
Staff expenditures and other payments for work performed	93 438	97 376	97 279	99,9
itemized: staff expenditures	92 956	96 842	96 839	100,0
Mandatory insurance paid by employer	32 581	33 961	33 901	99,8
Transfer of fund for social and cultural requirements	1 860	1 939	1 937	99,9
Program financing expenditures	76 200	76 200	76 195	100,0
Specific partial indicators for expenditures				
Total research and development expenses	51 000	51 511	49 713	96,5
therein: total institutional expenses	17 950	17 950	16 223	90,4
total specific expenses	33 050	33 561	33 490	99,8
Programs within the competence of providers	32 850	33 222	33 159	99,8
Staff expenditures and other payments for work performed in t	72 198	72 190	72 097	99,9
itemized: civil servants salaries	71 745	71 745	71 744	100,0
Development foreign aid		3 500	3 500	100,0
Radon Program	3 000	4 100	4 034	98,4
Provision of preparation for emergency situat.of Act No.240/2	2 000	3 000	3 000	100,0

Budget measures with external impact from the Department of the Treasury increased the budget by CZK 13,715 thousand in total and related particularly to necessary material needs for the fulfilment of tasks within the Chapter (in particular, for the fulfilment of research and development tasks) and needs for domestic and international coordination of the fulfilment of

tasks in the area of nuclear, biological and chemical protection. Selected budget measures ensured the compliance with changing legislation. The impact of budget measures on staff expenditures amounted to CZK 3,938 thousand.

Summary of assets, which the SÚJB is entitled to manage, is indicated in Table No. 1.2.

Table No. 1.2

(in "000" CZK, index, %)

Indicator	Balance as of 1 Jan. 2005			Balance as of 31 Dec. 2005			Chapter 2005	
	SÚJB	SÚRO	Chapter	SÚJB	SÚRO	Chapter	Developm	Struct.
Total assets	688 048	190 260	878 308	744 743	223 015	967 758	1,10	100,0
Total fixed assets	672 945	182 137	855 082	720 780	214 590	935 370	1,09	96,7
Intangible fixed assets	41 687	38 023	79 710	46 567	38 689	85 256	1,07	8,8
Tangible fixed assets	631 258	144 114	775 372	674 213	175 901	850 114	1,10	87,8
Financial investments	0	0	0	0	0	0		0,0
Total current assets	15 103	8 123	23 226	23 963	8 425	32 388	1,39	3,3
Inventories	0	0	0	33	0	33		0,0
Total receivables	917	104	1 021	1 262	136	1 398	1,37	0,1
Total financial assets	12 404	2 976	15 380	11 628	3 338	14 966	0,97	1,5
Budget profit (loss) accounts	1 782	5 043	6 825	11 040	4 951	15 991	2,34	1,7
Deferred assets accounts	0	0	0	0	0	0		0,0

Data on SÚJB Assets

Assets characterized in numbers in Table No. 1.2 are fully used within the SÚJB department according to current needs determined by the development of task fulfilment within the mission of the Office and activities in the special laboratory and operational background in the controlled organizations.

A substantial part of the assets includes instrumentation, especially for laboratory and testing activities, and information and communication technology equipment used mainly for the operation of radiation monitoring network, operation of emergency and coordination center and other crucial workplaces within the department. Motorcar equipment intended primarily for the surveillance activities performed by the SÚJB staff throughout the Czech Republic forms an integral part of assets structure and value. Technical and technological level of the assets, in particular of instrumentation and information and communication technologies, rests on expected qualitative level. However, assets servicing requires permanent monitoring and periodical recovery with impacts on the increasing budget-related exigency for renewal and reproduction of the assets caused especially by the prices, which copy the technological development.

The assets within SÚJB and within OSS SÚRO are not depreciated; the assets within the contributory organization, i.e. National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO) are depreciated in accordance with the current legislation.

A part of the assets in the SÚJB Chapter includes receivables in the amount indicated in Table No. 1.2. They refer to receivables resulting from assets problem solving of the former SÚJB employee (claim filed with the relevant court) and receivables resulting from unsettled penalties at the administrative proceedings (claim for recovery filed with the relevant revenue offices).

Performance of Revenues

It results from the structure of actual performance of revenues in the SÚJB Chapter for 2005 (see Table No. 1.3) that the performance of competencies, especially at SÚJB Headquarters, is characterized as public utility services with low correlation between the actual fulfilment of tasks and the revenues from SÚJB activities. The share of state budget on activity financing of the chapter corresponds thereto.

Table No. 1.3

(in "000" CZK, %)

Org. unit	Budget identific.	Revenue indicator	Budget		Real revenues	% of UR per.	Reven. structur
			Approved	Adjusted			
SÚJB			800	800	2 131	266,4	100,0
	0000 211	Revenues from SÚJB activities	500	500	1	0,2	0,0
	0000 213	Revenues from asset lease	300	300	235	78,3	11,0
	0000 214	Revenues from interests and actual fin.in	0	0	19		0,9
	0000 221	Received penalty payments	0	0	181		8,5
	0000 232	Other non-tax revenues	0	0	437		20,5
	0000 311	Revenues from fixed assets sold	0	0	11		0,5
	0000 413	Transfers from own funds	0	0	1 247		58,5
SÚRO			200	200	844	422,00	100,0
	0000 211	Revenues from SÚRO activities	200	200	800	400,00	94,8
	0000 214	Revenues from interests and actual fin.in	0	0	18		2,1
	0000 232	Other non-tax revenues	0	0	26		3,1
Total			1 000	1 000	2 975	297,50	X

Total Review of Drawing on the Expenditures

The expenditures on own production of both organizational units of the state (in case of SÚJB, including SÚJCHBO contribution) represent a significant part of the expenses on performance of competencies laid down in the Chapter (se Table No. 1.4). **As for current expenditures**, the staff expenditures and expenses on social security and health insurance, and expenditures on purchased services related to Office's activity support play a major role.

Table No. 1.4

(in"000" CZK,%)

Ident.	Classification by lines of expenditures	Budget		Actual drawing	% of drawing	Expenditure structure	
		Approved	Adjusted				
Current expenditures							
2161	SÚJB Central Body activity	193 590	200 923	200 710	99,9	64,4	52,1
2180	SÚJB research and development	51 000	43 015	42 925	99,8	13,8	11,1
2191	SÚJB international cooperation	14 701	12 887	12 626	98,0	4,1	3,3
5261	Emergency management	2 000	3 000	3 000	100,0	1,0	0,8
6222	Development foreign aid	0	3 500	3 500	100,0	1,1	0,9
	SÚJB in total	261 291	263 325	262 761	99,8	84,3	68,2
3779	SÚRO activity	33 378	40 438	41 642	103,0	13,4	10,8
3780	SÚRO research and development	0	7 396	7 331	99,1	2,4	1,9
	SÚRO in total	33 378	47 834	48 973	102,4	15,7	12,7
Total current expenditures		294 669	311 159	311 734	100,2	100,0	80,9
Capital expenditures							
2161	SÚJB Central Body activity	69 400	55 271	55 269	100,0	75,3	14,3
2180	SÚJB research and development	0	1 100	1 100	100,0	1,5	0,3
3779	SÚRO activity	6 800	17 054	17 050	100,0	23,2	4,4
Total capital expenditures		76 200	73 425	73 419	100,0	100,0	19,1
Total expenditures		370 869	384 584	385 153	100,1	x	100,0

Expenditures on Research and Development

Basic review of the expenditures on research and development of the Chapter is shown in the following Table No. 1.5.

Table No. 1.5

(in "000" CZK, %)

Classification by lines of expenditures	Budget		Actual drawing	% of drawing	Expendit. structure
	Approved	Adjusted			
Total expenditure on research and development	51 000	51 511	49 713	96,5	100,0
therein: - institutional expenditure on VaV	17 950	17 950	16 223	90,4	32,6
- specific expenditure on VaV	33 050	33 561	33 490	99,8	67,4
PO - SÚJCHBO contributions	22 500	21 500	19 857	92,4	39,9
therein: - institutional expenditure	17 800	17 800	16 157	90,8	32,5
- specific expenditure	4 700	3 700	3 700	100,0	7,4
OSS - SÚRO transfers	0	7 396	7 331	99,1	14,7
therein: - institutional expenditure	0	0	0		0,0
- specific expenditure	0	7 396	7 331	99,1	14,7
Grants/transfers to universities *)	1 500	1 500	1 500	100,0	3,0
therein: - institutional expenditure	0	0	0	0,0	0,0
- specific expenditure *)	1 500	1 500	1 500	100,0	3,0
Grants to entrepreneurial entities	26 650	20 875	20 875	100,0	42,0
therein: - institutional expenditure	0	0	0		0,0
- specific expenditure	26 650	20 875	20 875	100,0	42,0
Associated expenditure	350	240	150	62,5	0,3

*) Including capital expenditure in the amount of CZK 1,100 thousand.

Research and development financing in the SÚJB Chapter was executed according to the regulations in force and the procedures were discussed with the Research and Development Council in conformity with the rules established. Basic budget operation in the field of Science and Research (VaV) in 2005 covered strengthening of the specific expenditure budget for handling of specific VaV tasks with the SÚRO organization. The SÚJB supported total of fourteen projects from the specific means of research and development in 2005.

Expenditure on Asset Reproduction

Complete information on employment of means of the 275 010 program – "SÚJB material and technical basis development and recovery" is provided in the following Table No. 1.6.

It results from the information that the resources for SÚJB asset reproduction program financing were drawn in accordance with the adjusted budget, which corresponded in SÚJB control bodies to the approved needs for asset recovery in the Chapter with a major focus on recovery and development of the parts of the assets necessary for the fulfilment of the mission of SÚJB and its technical background.

It was necessary to execute the transfer of part of the resources to the SÚJB Reserve Fund in 2005 in the area of capital expenditures intended for immovable assets reproduction in order to secure financial means for the completion of the construction works at the building III. SÚJB Bartoškova Street 28, which is moved for implementation to the year 2006 as scheduled. Therefore, the transfer to the Reserve Fund (RF) amounts to CZK 6,055 thousand.

Table No. 1.6

(in "000" CZK, %)

Identif.	Specific classification of expendit.	Budget		Actual drawing	% of drawing	Expendit. structure
		Approved	Adjusted			
2161 6111	Software	4 000	2 112	2 112	100,0	2,8
2161 6121	Buildings, halls and structures	15 000	26 294	20 239	77,0	26,6
2161 6122	Machines, instruments and devices	43 680	15 118	15 118	100,0	19,8
2161 6123	Transport means	3 340	1 493	1 492	99,9	2,0
2161 6125	Computer technology	3 380	1 984	1 983	99,9	2,6
2161 6351	Invest. grants for PO creation	0	8 270	8 270	100,0	10,9
2161 6361	Invest. transfers to RF OSS	0	0	6 055		7,9
Total SÚJB capital expenditure		69 400	55 271	55 269	100,0	72,5
2161 5171	Asset maintenance and repairs	0	3 875	3 875	100,0	5,1
Total SÚJB expenditure on asset reproduction		69 400	59 146	59 144	100,0	77,6
3759 6111	Software	1 200	544	544	100,00	0,7
3759 6122	Machines, instruments and devices	5 000	14 383	14 380	99,98	18,9
3759 6123	Transport means	0	1 246	1 246	100,00	1,6
3759 6125	Computer technology	600	881	881	100,00	1,2
Total SÚRO capital expenditure		6 800	17 054	17 051	99,98	22,4
Total expenditure on asset reproduction		76 200	76 200	76 195	100,0	100,0

Expenditure on International Cooperation

Substantially superior position of the Czech Republic within international scale in terms of care of nuclear safety and radiation protection securing is accompanied by a change in IAEA access to the aid to the Czech Republic. Therefore, the Czech Republic was placed from the position of straight recipient of technical assistance of the international institutions to the **position of independent entity**, which finances, mainly from own resources, participation of Czech experts in IAEA activities, co-finances selected projects and becomes one of the sponsors of the technical cooperation in their implementation.

Review of expenditure on international cooperation and aid is shown in the following Table No. 1.7.

Table No. 1.7

(in "000" CZK, %)

Identif.	Classific. by elements of expenditure	Budget		Actual drawing	% of drawing	Expendit. structure
		Approved	Adjusted			
2191 516	Service purchase	1 011	797	775	97,24	6,1
2191 517	Other purchases	5 770	4 670	4 450	95,29	35,2
2191 519	Expendit.related to noninvest.purchases	20	20	1	5,00	0,0
2191 551	Noninv.trans.of intern.org.and multinat.org.	7 900	7 400	7 400	100,00	58,6
2191	Total	14 701	12 887	12 626	97,97	100,0
6222 551	Noninv.trans.of intern.org.and multinat.org.	0	3 500	3 500	100,00	x
6222	Total	0	3 500	3 500	100,00	x

Transfers of Budget Means to the Reserve Fund

Total of CZK 6,055 thousand was transferred to the Reserve Fund with SÚJB for continuation of the building project Bartošková 28; CZK 1,560 thousand for financial provision of the activities of new staff for technical surveillance of nuclear facilities and CZK 1,643 thousand for the follow-up to VaV projects. Within OSS SÚRO, CZK 857 thousand was transferred from the budget for final equipment and operation of technical background capacities arising out of restorations and total of CZK 298 thousand for VaV project completion. Total review is indicated in the following Table No. 1.8.

Table No. 1.8

(in "000" CZK, %)

Indicator	Reality 2005		
	Total	SÚJB	SÚRO
Initial state	6 824	1 781	5043
Total revenues	10 413	9 258	1 155
- transfers from budget accounts	10 115	9 258	857
- noninvest. grants from foreign countries	236	0	236
- noninvest. grants from internat. institutions	62	0	62
Total expenditure	1 247	0	1 247
- transfers to own budget accounts	1 247	0	1 247
Closing balance	15 990	11 039	4 951

1.5. Legislative Activities

1.5.1. Legal Regulations

In the area of legislation, the priority of the previous period was the participation of SÚJB in the process of preparation and negotiation with regard to the draft amendments to the acts followed by the Office.

In the first place, the amendment to the Atomic Act was involved. This amendment has been prepared since 2004 under the gestion of the Ministry of Labour and Social Affairs in connection with a new Act on Work Inspection. New Act No. 253/2005 Coll., which became effective on July 1, 2005, laid down legislative prerequisites for the establishment of operative and effective state surveillance of technical safety for specified groups of engineering facilities in the nuclear energy.

Another legal standard, in preparation of which SÚJB participated, was a new Act on Amendment to the Acts in connection with the adoption of the Act No. 413/2005 Coll., on Classified Information Protection and on Safety-related Qualification. This act expands the Atomic Act by sensitive activity definition. In addition, its provisions related to sensitive activity definition were also amended.

The most significant legislative activity of the SÚJB in the last year was the preparation of the amendment to the Act No. 19/1997 Coll., which implements the Convention on the Ban on Development, Production, Stockpiling, Use of Chemical Weapons and on their Disposal to the Czech legal system. The draft amendment to this act reflects experiences in SÚJB inspection activities, and summarizes and simplifies the administrative duties related to communicating the quantity of imported and exported chemical substances as provided by law. Furthermore, the amendment brings a new modification of the administrative punishment and amends the conditions for the protection of interests of the security of the Czech Republic in licensing process pursuant to this act. The draft amendment was approved in the year 2005 by the government and submitted for discussion by the Parliament of the Czech Republic.

In the last year, the Office participated on request in reading of the draft amendment to the Atomic Act, drawn up by the group of senators, in the Senate Committee. The authors propose an expansion of the sphere of participants in some proceedings for permits issued pursuant to the Atomic Act, introduce granting of contributions from the nuclear account to the municipalities situated within the emergency planning zone and prolong the term of limitation in case of compensation of nuclear damages. The government at its meeting held in September last year expressed its dissent from this senate bill.

In the last year, SÚJB, as in the previous period, participated in the process of review of the draft of legal regulations within the interdepartmental amendment procedures. In cooperation with the Legal Department and material departments, SÚJB prepared approximately 250 viewpoints on legal regulations, on which SÚJB, as the place for amendment procedure, is obliged to comment according to Legislative Rules.

A substantial part of the legislative activities of SÚJB represents the creation of its own decrees and small-scale cooperation with other departments in their preparation.

Further to the amendment to the Atomic Act related to a new Act on Work Inspection, the SÚJB published Decree No. 309/2005 Coll., on assuring technical safety of selected nuclear facilities. This decree defines engineering facilities used in the nuclear energy, lays down requirements for assurance of technical safety of engineering facilities used in the nuclear energy and procedures for the review of the compliance of such facilities with technical requirements.

With a view to specify the conditions for the performance of regulated activities within the competence of SÚJB for purposes of free movement of persons within EU, the SÚJB prepared, further to Act No. 18/2004 Coll., on approval of professional qualification, SÚJB Decree No. 193/2005 Coll. The Decree 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.

In relation to the task emerged from the National Action Plan for the Fight Against Terrorism approved by the government, SÚJB published in the last year the amendment to Decree No. 144/1997 Coll., on physical protection of nuclear materials and nuclear facilities, and on their classification (Decree No. 500/2005 Coll.). The amendment introduces, inter alia, the term of design basic threat and modifies thus the requirements for technical and administrative measures taken in order to assure physical protection of nuclear facilities.

An important decree was also the amendment to Decree No. 307/2002 Coll., on radiation protection, which transposed Council Directive No. 2003/122/Euratom on control of sealed high activity ionizing sources and abandoned sources (Decree No. 499/2005 Coll.).

Towards the end of the monitored period, the working commission of the Legislative Council of the Government read the amendment to Decree No. 319/2002 Coll., on function and organization of the countrywide radiation monitoring network. (This decree was published in the Collection of Laws under No. 27/2006 Coll. and became effective on February 1, 2006.)

In cooperation with the Department of the Treasury, two departmental decrees on radon problems, which set the method for distribution and collection of problem-based exposure detectors, conditions for giving grants for exposure removal and procedure for giving the grant. Two first areas are handled in new SÚJB Decree No. 462/2005 Coll.

1.5.2. International Agreements, Treaties, Conventions

The SÚJB was engaged in the negotiations of four international treaties in 2005.

In terms of international-political significance, it is required to indicate in the first place the modifications made in the Convention on Physical Protection of Nuclear Materials (Ministry of Foreign Affairs Communication No. 114/1996 Coll.), which were adopted, after several-year efforts, by the contracting countries at the close of the diplomatic conference held in Vienna from July 4 to 8, 2005. The SÚJB supported the whole preparation process for the modifications of this Convention on the expert level. The modifications consist mainly in

expanding the operation of the Convention from current physical protection of nuclear materials on international transports to physical protection of nuclear materials on their use, storage and transport, physical protection of nuclear facilities and measures to prevent nuclear terrorism. The national ratification process is currently in progress.

On the authority of the Czech Government, the SÚJB Chairperson signed the "Agreement between the Government of the Czech Republic and the Government of Poland on Early Notification of the Nuclear Accident and Exchange of Information on Peaceful Utilization of Nuclear Energy, Nuclear Safety and Radiation Protection" on September 27, 2005. This international government-category treaty will become effective within thirty days from the date of delivery of later diplomatic note confirming its approval; the Polish side did not deliver the relevant note before the end of 2005. The agreement is related to multilateral international treaties – Convention of Early Notification of Nuclear Accident, Convention of Aid in Case of Nuclear or Radiation Accident, Convention of Nuclear Safety, and governs the framework defining provision of information from the field of peaceful utilization of nuclear energy. The main purpose of this Agreement is to specify the method and form of information communication and define the field and content or scope of data exchanged in case of nuclear accident or other emergency event important in terms of nuclear safety.

In the course of 2005, the State Office for Nuclear Safety attended other negotiations on modifications of the "Agreement between the Government of the Czechoslovakian Socialist Republic and the Government of the Austrian Republic on Issues of Common Interest in the Field of Nuclear Safety and Radiation Protection". The negotiation on modification of this Agreement was initiated in December 2001 at the meeting in Brussels, when the Prime Ministers of both countries met in the presence of EU Commissioner G. Verheugen in order to solve the situation regarding commissioning of Temelín Nuclear Power Plant. The purpose of the modifications in the Agreement is to improve the conditions for communication between neighbouring countries in the sensitive area of utilization of nuclear energy and, especially, nuclear power. External meetings are to be terminated in the early part of the year 2006.

Furthermore, the State Office for Nuclear Safety participated in the negotiation of the Agreement between the Organization for the Prohibition of Chemical Weapons (OPCW) and the Government of the Czech Republic for support providing. This upcoming international agreement is based on Item 7 Article X of the Convention on the Ban on Development, Production, Stockpiling and Use of Chemical Weapons and on their Disposal (Ministry of Foreign Affairs Communication No. 94/1997 Coll.). Under the mentioned provision, the contracting countries provide support to each other through the Organization for the Prohibition of Chemical Weapons (hereinafter referred to as "Organization") in one of the following ways, e.g. by concluding the Agreement with the Organization on providing the so-called support on request. The Czech Republic offers contingent support in the form of providing analytic specialist team with mobile chemical laboratory, equipment for protection against chemical warfare agents, means for detection and decontamination of chemical warfare agents and provision of additional support (protective equipment testing, training of experts from contracting countries in protection against chemical weapons, etc.).

1.5.3. Internal Regulations of the State Office for Nuclear Safety

SÚJB internal documentation system assists in due fulfilling of statutory duties within the competence of SÚJB (Act No. 18/1997 Coll., Act No. 19/1997 Coll. and 281/2002 Coll.) as well as tasks arising from number of other legal regulations that are binding upon administrative authorities. This concerns Chairperson's orders, which contain specific adjustment for certain activities, and internal normative regulations. The internal regulations are broken down into orders, which lay down SÚJB basic systems (organization order, work order, and records and shredding order), directives and guidelines. The individual departmental deputies and managers can issue instructions and guidelines in accordance with this internal documentation.

In the last year, the SÚJB focused on introduction of new rules of administrative procedure into the Office activity in the field of internal documentation. In the field of emergency planning, instructions and procedures were drawn up for SÚJB Crisis Staff, new methodologies and instructions for Radiation Monitoring Network, and furthermore, the update of methodologies was carried out for the field of information and communication technologies.

1.5.4. Administrative Proceedings

The State Office for Nuclear Safety conducts number of administrative proceedings, which are terminated by issue of an administrative action. The number of issued administrative actions is indicated in Table No. 1.9 "Decision-making process in administrative proceedings by individual areas". Although they proceed according to rules of administrative procedure in administrative proceedings, the individual proceedings are different in subject complexity and amount of documents under consideration. The administrative actions cover wide scale of actions from licensing, documentation approval to license cancellation.

Table No. 1.9 Number of issued administrative actions

	Nuclear safety	Radiation protection	Emergency preparedness	Non-proliferation of weapons of mass destruction
Number of administrative actions	304	2229	4	166

1.6. Central Registers and Databases Created at SÚJB

Over the course of 1997 to 2004 the State Office for Nuclear Safety developed management tools for the state records systems as stipulated by Act No. 18/1997 Coll. This concerns the central records (registers) of professional exposures, ionizing radiation sources, licensees, reporting entities and population exposure in the application of ionizing radiation sources in medicine as well as population exposure due to natural radiation sources.

The registers were routinely utilized in the year 2005, and a new source categorization was introduced into the source registry in accordance with the introduction of new requirements for the so-called high-activity sources. A new module was created, which enables the access to recorded data at individual licensees – including the registry of sources and personnel – via Internet. This development will enable high-efficiency update of recorded data and ease the communication of determined data to the licensees with the possibility of remote access.

2. NUCLEAR SAFETY

2.1. Dukovany NPP

2.1.1. Assessment

In connection with the accomplishment of 20 years of operation of Unit 1 of Dukovany NPP, the holder of the permit to operate nuclear facility presented the amended safety-related documentation for assessment. The most important documents included the Pre-operation Safety Report, Limits and Conditions of Safety Operation, Program of Operational Inspections, Monitoring Programs and the proposal for decommissioning technique. Based on such assessment as well as based on results of inspections carried out, the SÚJB issued a permit in the first half of December 2005 for its further operation for a term of ten years, i.e. until the year 2015. If conditions included in the permit are observed, Unit 1 is allowed to be operated in the period provided.

Within the improvement of nuclear safety, the modernization and recovery of control systems and the approval process for the use of improved fuel on Unit 3 continued at Dukovany Nuclear Power Plant. The SÚJB approved the revision of the Comprehensive Program for Physical and Power Start-up of Unit 3 following the control system recovery and the individual commissioning programs. It concerned the programs for evaluation and verification of unit dynamics on the occurrence of events analysed in the Safety Report, including equipment failure, protection interventions and unit regulation or shutdown. Based on the assessment of the required documentation and based on results of inspections carried out, the SÚJB permitted Unit 3 to be put into operation. Implementation of similar modernization continues also on other units of Dukovany NPP according to the schedule approved and controlled by SÚJB.

During the year the operational event feedback system recorded, controlled and closed in total 47 reported events at Dukovany Nuclear Power Plant, of which 19 events were rated with the INES Level 0 according to the International Nuclear Event Scale, and no event rated INES Level 1 or higher occurred.

An automatic scram of Unit 3 occurred in April by automatic action of the protection systems on the decrease of reactor power to initial power level. The systems were activated during testing and tuning of new equipment for neutron monitoring. Manual unit scram occurred twice in total during the year, and both of the cases involved Unit 3. The first event, which occurred in August, was caused by unexpected failure of three control element assemblies. The reactor was consequently shut down by the operator in accordance with the requirements of operating procedure. The failure was immediately removed, however, the root cause was not determined accurately and, therefore, the event reoccurred in September. In this case the root cause was determined correctly and the faulty equipment was removed. The modifications were carried out under SÚJB control.

Table No. 2.1 Number of the assessed events and automatic scrams

Dukovany NPP	2000	2001	2002	2003	2004	2005
INES 0	21	17	12	13	12	19
INES 1	0	1	2	1	0	0
Automatic reactor scram	1	0	0	1	0	1

2.1.2. Inspection Activities

In 2005, a total of 179 inspections closed up with reports were carried out at Dukovany Nuclear Power Plant. The inspections were carried out as planned inspections on the basis of approved half-year plans of inspection activities, further as ad-hoc inspections on the basis of needs and findings incurred during surveillance activity, and as routine inspections carried out by site inspectors. In most cases the inspectors detected neither deficiencies in fulfilling of legislative requirements nor breach of Limits and Conditions.

Nuclear safety during operation is primarily checked in the course of regular monthly inspections performed at individual units and in the course of preparedness inspections for unit restart after refuelling. There were no such deficiencies detected during the inspections, which would prevent the return of the unit into operation .

However, repeated mechanical damages (marks) to the internal reactor pressure vessel surface were detected in inspection of Unit 4 preparedness for start-up after refuelling. The respective occurrence of marks does not affect the unit operation nuclear safety, however, since this problem was not solved in a satisfactory manner, SÚJB imposed an obligation on the operator to examine and remove the cause of this event and take measures in order to prevent its repetitive occurrence before February 28, 2006.

On the basis of results of the tests carried out in the presence of the State Examining Committee for Special Qualification Testing, 37 selected employees of Dukovany Nuclear Power Plant were awarded the license of activity at the nuclear facilities in the Czech Republic. Carried out planned inspections focused on preparedness of shift staff before start-up of all units after refuelling, including preparedness of start-up staff for Unit 3 after the recovery of I&C system, found no deficiencies in staff preparedness.

2.1.3. Final Assessment of Operation Safety

From the continuous assessment of inspection results and safety indicators it may be stated that the operation of all units of Dukovany Nuclear Power Plant was safe and in total on a very good level. The units were operated in accordance with the legislative requirements and there was no occurrence of event affecting the nuclear or radiation safety.

2.2. Temelín NPP

2.2.1. Assessment

During the evaluated period regular outages related to refuelling were performed at both units. The outage performed at Unit 2 involved extended outage including scheduled complete recovery of the core, inspection of the reactor pressure vessel and other equipment in accordance with the approved Program of Operational Inspections and other activities. A number of equipment modifications were done during both outages, which resulted from the experience with the existing operation of both units (e.g. modification of control rods and replacement of sealing in the primary circuit). Several events occurred during both outages eventuating in exceeding of their scheduled time. The event occurred at Unit 2 involved spilling over the division plane of linear step-by-step drives for clusters at the preparation time for putting the unit back into operation caused by inconsistent inspection of all activities and their coordination. It was consequently required to decontaminate and clean the

equipment. The operator took adequate measures in maintenance quality control. In the course of the outage at Unit 1, the deflection of some fuel elements and fuel assemblies was identified. This fact led to the decision regarding unscheduled removal of any nuclear fuel outside the reactor core. The following is provided as to this event:

Fuel condition is monitored in detail at every nuclear power plant within the Program of Inspections of irradiated fuel assemblies carried out in the course of scheduled refuelling outages. The Program of Inspections includes visual inspection of selected recovered fuel assemblies including detailed visual inspection of fuel elements taken out of the fuel assemblies, measurement of their length, measurement of oxide coating, inspection of fuel element sheathing using the eddy-current method, etc. In this way the impact of the effects is monitored, which accompany the energy production and in consequence of which the properties of any fuel type may change. The fuel elements are designed to withstand fuel operational conditions throughout their lifetime. They must withstand density changes, fission gas release, coating material creep and other physical parameters changing with burn-up. Fuel element coating is designed to ensure its integrity at temperatures up to 1200°C, at excessive internal pressure of gases and at excessive stress, deformations and fatigue stress of coating. Therefore, as a result of the operation, geometric changes can occur, which must not exceed predetermined controlled values.

In case of fuel for Unit 1, the change in fuel assembly geometry was also identified. Such geometric deformations caused incomplete seating of some control elements (clusters) after their transit through the core. Nevertheless, the extent of such changes did not go out of permissible limits and does not prevent further safe operation.

Results of executed measurements and safety assessment must be submitted to the SÚJB after every refuelling prior to issue of the permit for the reactor start-up after outage completion. Due to indications of geometric changes the additional periodic tests of control elements are then performed and assessed. Assessments performed so far show that nuclear safety is not endangered. Results of fuel monitoring and testing are used for improvement of the fuel element design and the manufacturing process and for confirmation that the design principles and safety criteria are respected.

An unscheduled shutdown of Unit 1 occurred in April in order to repair the turbine rotor and another unscheduled shutdown took place in December by reasons of the forced repair of the main circulation pump. Due to this failure, the planned emergency outage for the replacement of the turbine rotor at Unit 2 was postponed.

There was no unscheduled automatic reactor scram in the year 2005. All shutdowns were manually activated within the tests of cluster failures or physical start-up testing after refuelling. A total of 201 reported events was recorded in the operational event feedback system, of which the SÚJB rated 43 events with the INES Level 0 according to the International Nuclear Event Scale and 5 events were rated with the INES Level 1.

One event occurred at Temelín NPP Unit 1 was rated with the INES Level 1, when the reactor was shut down and the decay heat power was removed by core cooling low-pressure pumps and one of the pumps was shut down by spurious high-pressure signal for coolant in the primary circuit. Main control room operating personnel restored the removal of decay heat from the core in accordance with the regulations for occurrence of such situation. Another event rated with the INES Level 1, which occurred at Unit 1, involved repeated non-start-up of one of the three system dieselgenerators at regular test. The failure cause consisting in faulty regulation of fuel supply was detected by means of re-examination. After repair and

testing the dieselgenerator was declared operable. A special testing mode for this dieselgenerator was adopted on SÚJB request.

Remaining three events rated with the INES Level 1 occurred at Unit 2. In April, when the planned refuelling outage took place at the unit, the line ensuring nominal feeding of power to the unit failed due to the error caused by the supplier's employee. In view of the revision activities in progress the off-site power reserve was not available, and therefore, the automatic start-up of emergency electrical sources took place in accordance with the philosophy of design, including start-up of relevant automatics. In July, at unit start-up after refuelling, the start-up of steam generator emergency feeding pumps was spuriously activated and the operating personnel cooled down the unit in accordance with the documentation applicable and put it into stabilized condition. Non-functional fans were detected again on two systems in July at the check run of the steam generator emergency feeding pump, since they were electrically interlocked. The fans ensure cooling of the pump rooms. Both valves were interlocked in the time of outage and their interlocking was not detected in a timely manner due to inconsistent access of the operating personnel during specified inspections.

Table No. 2.2 Number of the assessed events and automatic scrams

Temelín NPP	2000	2001	2002	2003	2004	2005
INES 0	20	10	26	36	41	43
INES 1	1	2	2	2	3	5
Automatic reactor scram	3	3	2	2	2	0

2.2.2. Inspection Activities

A total of 84 inspections closed up with reports were carried out at Temelín Nuclear Power Plant, which corresponds to supervising of the half number of units against Dukovany Nuclear Power Plant. The inspections are carried out as planned inspections on the basis of approved half-year plans of inspection activities, further as ad-hoc inspections on the basis of needs and findings incurred during surveillance activity, and as routine inspections carried out by site inspectors. The operation of units is monitored by regular monthly inspections and system inspections of unit preparedness for unit restart after refuelling. On the basis of their results it may be stated that the units were operated in 2005 in accordance with the requirements and conditions of nuclear safety. The Limits and Conditions were observed, except for two events recorded in July and August on Unit 2. The operator fulfils the requirements of Quality Assurance Rules and Procedures laid down in the approved Quality Assurance Program in the field of physical condition management and maintenance.

The inspections focused on examination of operational events detected that the remedial measures imposed do not always lead to prevention of failure repeated occurrence. Cross variances between some control and working documents or uncertain criteria definition for significant events resulted in inconsistent examination of events. There were cases, when the postponement of the date of remedial measures imposed resulted in repeated occurrence of the event or increased the risk of repeated occurrence of the event. Therefore, SÚJB in its further control activity will primarily concentrate on constant check of operator's fulfilment of all imposed remedial measures.

Reliability of both turbine-generators remains a long-term problem and caused long-term operation of Unit 2 with reduced power. Problem causes were identified and their solutions

require replacement of high-pressure turbine rotors that are manufactured with the delivery date scheduled for 2007.

On the basis of carried out tests the SÚJB awarded the license of activity at the nuclear facilities in the Czech Republic to 20 successful applicants from Temelín Nuclear Power Plant. Performed inspections also observed the fulfilment of requirements laid down in legislation in the field of preparedness of shift staff before start-up of Units 1 and 2.

2.2.3. Final Assessment of Operation Safety

From the continuous assessment, inspection results and safety indicators it may be stated that the operation of both units of Temelín Nuclear Power Plant was generally safe, on sufficient to good level and no environmental impact occurred in the vicinity of the nuclear power plant. The fuel condition is monitored on both units and does not show any deviation, which would significantly reduce the nuclear safety.

In 2006, the SÚJB in its control activity will accord priority treatment to the fields with identified problems, i.e. in particular changes in nuclear fuel geometry and their possible impacts, deficiencies in the field of event examination and increased number of events rated with the INES Level 1.

2.3. Research Nuclear Facilities

2.3.1. Assessment

The LVR 15 reactor at the Nuclear Research Institute in Řež was operated for 216 days in total within the framework of experiments and irradiation service. There were five unscheduled reactor shutdowns, two of which were due to electric network failure. The remainder were due to exchanger leakage, to experimental loop failure and also due to personnel error. The occurrence of unscheduled shutdowns is lower by 7 against the year 2004. The collective dose equivalent for operating personnel reached 32.5 mSv.

The LR-0 reactor at the Nuclear Research Institute in Řež was operated for 375 hours in total (106 shifts) in the year 2005; 96 hours of the operation were aimed at revisions and tests, and assembly stacking. The reactor was used on the measurement of WWER 440 and WWER 1000 core for the projects of the Ministry of Industry and Trade and the IAEA. During operation of the reactor there was no unscheduled shutdown and no breach of the approved Limits and Conditions. The collective dose equivalent for operating personnel reached 5.39 mSv.

The VR-1 reactor at the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague is used for teaching purposes. The reactor was operated for total of 1195 hours in the year 2005. The IRT-3M fuel was exchanged for fuel with lower IRT-4M enrichment in the fourth quarter on the reactor. The IRT-3M fuel was shipped back to the country of origin - the Russian Federation - under the supervision performed by SÚJB. During the transportation no failure affecting the nuclear safety and radiation protection occurred. The dose equivalent for reactor operating personnel is on a very low level, and in case of students it reaches the level of natural background.

2.3.2. Inspection Activities

The SÚJB carried out 10 inspections on the LVR-15 reactor, four IAEA inspections of nuclear materials and the IAEA INSARR (Integrated Safety Assessment of Research Reactors) mission was performed aimed at fulfilling of requirements and recommendations of the INSARR mission held in 2003. The SÚJB carried out 4 inspections on the LR-0 reactor, and IAEA together with SÚJB performed one joint inspection of nuclear materials. There were 5 inspections carried out by SÚJB on the VR-1 reactor, of which one was performed in the presence of IAEA and EURATOM. Two inspections were carried out by SÚJB and IAEA before shipment and after arrival of new fuel. Inspections carried out at all subjects revealed no serious deficiencies.

On the basis of its sessions, the State Examining Committee for verification of special qualification of selected personnel examined total of 12 selected employees working at the research nuclear facilities, and of this number 8 employees at the Nuclear Research Institute in Řež and 4 employees at the Faculty of Nuclear Science and Physical Engineering were awarded the license of activity at nuclear facilities in the Czech Republic. Inspections aimed at occupying the shifts with selected personnel with valid authorization were carried out on the LVR-15, LR-0 and VR-1 reactors in the year 2005 and detected no deficiencies in this field.

2.3.3. Final Assessment of Operation Safety

In spite of very long operating time of the reactor (49 years) the safety level of the LVR-15 reactor operation is increasing. The follow-up IAEA INSARR mission, during which the fulfilment of recommendations and requirements of the INSARR mission performed in the year 2003 was observed, proved this increasing trend. The operation safety of the LR-0 reactor is on a stable level and in the case of the Nuclear Research Institute in Řež participation in international projects, the extension of operating time is considered. However, this extension will require equipment modernization of this reactor. The fuel at the VR-1 training reactor was exchanged for fuel with lower enrichment, and the risk of abuse of this fuel was thus reduced.

2.4. Other Nuclear Facilities

Other nuclear facilities include interim spent fuel storage facilities, spent fuel storage facilities and repositories. Assessment of their nuclear safety with regard to other logical sequences of their operation is provided in Chapter 3 "Spent Nuclear Fuel and Radioactive Waste Management".

2.5. Safety Analyses

Safety Documentation

The SÚJB experts assessed the updated **Pre-operational Safety Report** in order to issue a license to continue operation of Unit 1 at Dukovany Nuclear Power Plant. This report is currently developed in the form of document segmented into 18 chapters so that it fully respects the international custom for development of such basic document showing fulfilment of all basic requirements for nuclear safety and radiation protection. Attention was primarily paid to chapters providing description of the results of safety analyses, which now include the probabilistic studies performed so far. An important question was the assessment of the method and completeness of the fulfilment of requirements for the solution of safety issues

included in the document "Safety Issues and their Ranking for WWER-440 Model 213 Nuclear Power Plants" issued by the International Atomic Energy Agency (IAEA). A number of safety issues have already been solved, some solutions, such as replacement of control systems, requiring long-term investments are carried out under the supervision of SÚJB inspectors.

The SÚJB approved new revision of the **Limits and Conditions for Safe Operation of Dukovany Nuclear Power Plant (LaP)** in February 2005. The subject of this new revision was mainly unification of the document with new requirements for control systems, which arose from putting the I&C system into operation and using the improved fuel at NPP Unit 3 and incorporating experience from past operation. Separate documents applicable for individual units were approved for the first time in the history of Dukovany Nuclear Power Plant. The assessment of Limits and Conditions revision required a number of analyses of the impact of performed changes on nuclear safety, a number of calculations and analyses.

The change in ČEZ, a.s. organizational structure and its effects on the structure of management and responsibilities in nuclear power plants influenced the text of the Limits and Conditions parts "Management Personnel Responsibilities" for both nuclear power plants operated by the company ČEZ, a.s.

The SÚJB decision approved the change of the **Limits and Conditions for Temelín Nuclear Power Plant**, which modified the values of annual committed effective doses E(50), and allowed the introduction of radionuclides into the environment in the form of liquid effluents from Temelín Nuclear Power Plant into the Vltava river in the Kořensko profile in the amount, which does not exceed the authorized limit of 3 μSv per year for individuals from critical group of population. This limit refers to the sum of effective doses from external exposure and the committed effective doses from internal exposure. Another important change of the Limits and Conditions for Temelín Nuclear Power Plant concerned the approval of Chapter "Definition of Unit Operating Modes", which accepted the limiting coolant temperature in the primary circuit in mode 6 taken into consideration in the original Russian technical project (equivalent to initial design in the Czech Republic) or in Russian normative documents for safe operation of WWER-1000 units with 320 type reactors.

The **Initial Safety Analysis Report** is an important assessed document for siting of the Spent Fuel Storage Facility at Temelín Nuclear Power Plant. This report is the first document proving the suitability of storage facility siting on the selected site and describing presumed use of storage procedures and technology. The report contains design data, safety analyses of expected emergency internal and external events, preliminary assessment of the storage facility operation impact on the environment, assessment of the concept from the viewpoint of assurance of nuclear safety, radiation protection and emergency preparedness, and the proposal of concept for safe decommissioning of the Spent Fuel Storage Facility.

Probabilistic Safety Assessment (PSA)

In connection with the request submitted by the company ČEZ, a.s. in order to modify Limits and Conditions documentation for both nuclear power plants, the supporting PSA assessment was used with the aid of assessment methodology, international instructions and recommendations from IAEA and the US Nuclear Regulatory Commission (U.S. NRC). In several cases, the probabilistic approach represented one of the basic arguments of the operator in the modified presented document. Furthermore, the "Summary Report of Dukovany Nuclear Power Plant PSA" for 2004 was assessed, i.e. the completeness and modifications in the developed PSA study in the year in question were assessed. The

assessment was also performed with the aid of international recommendations laid down in particular in IAEA-TECDOC-1135 and IAEA-TECDOC-1136, and the regulations of the US Nuclear Regulatory Commission (U.S. NRC).

Use of Risk Monitor in SÚJB Surveillance Activity

Local inspectors of the PSA group began to use a *Risk Monitor* in 2005 at both nuclear power plants. This monitor is used for monitoring and control of the course of the immediate risk of the operation in unit power and non-power conditions and for repair planning during unit outages. The monthly courses of the immediate risk of the operation and cumulative values of the immediate risk were assessed on the basis of accesses and criteria laid down in the recommendations of the US Nuclear Regulatory Commission (U.S. NRC). The Office approved the values of the immediate risk criteria proposed by ČEZ, a.s. The values of the immediate risk did not exceed the approved limits on any of the units at both power plants.

All inspectors, who need basic information from the risk area in the performance of their job, can access the updated software application INFORISK via Intranet. This software application reflects the current results of the PSA studies of both nuclear power plants and informs users about international legislation, accesses, recommendations and requirements in the field of PSA.

Research and International Projects

In 2005 the Czech workplaces solved projects as a support of state surveillance during safety assessment, which are aimed at continuous improving of the level and methods for nuclear safety assessment of the operated nuclear power plants. The following was involved:

Probabilistic Assessment of Sudden Failure of Reactor Pressure Vessel

Project solution consisted in development of the computer program for probabilistic assessment of sudden failure of WWER 440 and WWER 1000 type reactor pressure vessel at pressure-thermal shock (PTS) and in comparison of the probability of sudden failure of type WWER 440 and WWER 1000 type reactor pressure vessel with the requirements set for pressure vessels of other pressurized water reactors (PWR) used in the countries of EU. A part of the solution was also the preparation of standard procedure for probabilistic assessment of sudden failure of reactor pressure vessel.

Material sampling of the inside power reactor pressure vessel for determination of fast neutron flux

The purpose of the project was to propose and verify the equipment for demonstration sampling of the inside weld bead of the WWER type reactor pressure vessel for the retrospective dosimetry purposes. The "SKIN" handling device was used for the sampling, which was performed during planned outage within the framework of periodic operational inspections of the Dukovany NPP Unit 3 reactor pressure vessel carried out in March 2005.

Determination of actual course of radiation damage over the thickness of the WWER type power reactor pressure vessel wall

The purpose of the project was to perform tests on specimen irradiated within the large-scale irradiation experiment, when the test specimen were put down into the thickness of the WWER-1000 type reactor pressure vessel wall and irradiated with the fluency corresponding to the design value. Assessment of such tests together with detailed dosimetry and accompanying calculation will allow determining optimum criteria for assessment of the impact of WWER type reactor pressure vessel wall thickness on its integrity, particularly on resistance to sudden failure during both the pressure-thermal shock (PTS) modes, and during

the assessment of admissibility of defects detected within the framework of operational inspections.

Warm Pre-Stressing (WPS) influence on reactor pressure vessel integrity in case of pressure-thermal shock related accidents

The project will be aimed at verifying the occurrence of the "Warm Pre-Stressing" phenomenon with the Czech reactor pressure vessels in the course of stressing as at accidents with the pressure-thermal shock, and further its impact on fragile-fracture characteristics of materials used and incorporating the impact of this phenomenon into the procedures for integrity assessment of reactor pressure vessel at Czech nuclear power plants together with determination of real safety reserves of the lifetime.

Development and verification of probabilistic best-fit method and thermal-hydraulic model of nuclear power plant for the purposes of independent safety analyses performed for SÚJB needs within the framework of safety documentation assessment

The subject of the project is development and verification of probabilistic best-fit method for the deterministic assessment of operation safety at nuclear power plants with pressurized water reactor (PWR), which is based on the results calculated with the thermal-hydraulic best-fit calculation code. The probabilistic method is to be verified by comparing the results of calculations determined according to developed methodology with the values measured on experimental facilities. Application of the best-estimate method on calculations with the current thermal-hydraulic nuclear power plant model shall enable the surveillance body to ensure performance of independent analyses that will contain the assessment and quantification of uncertainties of calculation results and will comply with the international requirements on analysis quality.

Computer code assessment and validation, based on PSB-WWER experimental data

The SÚJB promotes activities in the field of improvement of authenticity and accuracy of thermal-hydraulic safety analyses in the form of participation of special workplaces in international projects. As a guarantee of work suitability and recipient of results, the Office enables the workplaces to participate in international cooperation in the field of realistic computer code validation by using results of the international experimental programs and with introduction of more advanced assessment methods for uncertainties of analysis results. For this purpose, the solution entitled "Assessment and validation of computer codes" and based on PSB-WWER experimental data was initiated in the Czech Republic within the framework of the PHARE horizontal program for the support of the Community in the field of nuclear safety for the year 2003. The primary purpose of the task handling is to improve numerical simulation of design accidents and expected transient states with the use of validated computer codes and methods in the form of comparison of calculation results with the relevant experimental data. The results are expected to improve and increase the authenticity of license procedures used by the state surveillance (in the field of safety analyses).

2.6. Assuring Technical Safety of Specifically Designed Selected Facilities

In connection with the entry of the amendment of the Atomic Act and Decree No. 309/2005 Coll. into force, the SÚJB completed and ensured the performance of state-governed surveillance in assuring technical safety of selected facilities in cases, when the state-governed professional surveillance of the safety of reserved technical facilities began before the date of entry of this Act into force, or in the period, when the activities related to the assessment of the accordance of selected facilities with technical requirements laid down in

the Decree were not ensured by an authorized person. In that period, the SÚJB ensured necessary activities related to the assessment of the accordance in manufacturing specifically designed selected facilities by means of independent accredited inspection authorities for the field of nuclear-power facilities. After the performance of accredited organization activities, the Office issued final opinions on technical safety of such specifically designed selected facilities. Within the framework of its activities, the SÚJB assessed organizational measures of the licensee for assuring its control activity arising from new applicable legislation.

In assessing requests for the grant of an authorization submitted by the applicants RW TUV Praha and ITI Praha for the performance of activities in the field of technical safety control the SÚJB cooperated with the Czech Office for Standards, Metrology and Testing (ÚNMZ). The authorization was granted to these organizations in December by decision made by the Czech Office for Standards, Metrology and Testing (ÚNMZ).

3. SPENT NUCLEAR FUEL AND RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

3.1. Radioactive Waste Production and Management

3.1.1. Storage, Treatment and Transport of Radioactive Waste

A total of 249 m³ of liquid radioactive concentrate and 34.1 t of solid radioactive waste were produced at Dukovany Nuclear Power Plant. A total of 213 m³ of liquid radioactive concentrate and 54.5 t of solid radioactive waste were produced at Temelín Nuclear Power Plant. The liquid waste was bituminised and stored. Three transports of treated radioactive waste from Temelín Nuclear Power Plant to the Radioactive Waste Repository (ÚRAO) in Dukovany were carried out in the year 2005. The SÚJB issued the permit for the management of radioactive waste generated at Dukovany Nuclear Power Plant in the form of treatment for the company ČEZ ENERGOSERVIS, a.s. A total of 0.7 m³ of liquid radioactive concentrate and 50.5 m³ of solid radioactive waste were produced at the Nuclear Research Institute Řež, a.s. The waste was stored in a safe manner. All radioactive wastes were treated in conformity with the Limits and Conditions for safe management of radioactive waste approved by SÚJB.

3.1.2. Storage of Radioactive Waste

Radioactive waste generated at nuclear power plants is stored at the Radioactive Waste Repository (ÚRAO) in Dukovany. In 2005, a total of 217.4 m³ of radioactive waste from Dukovany Nuclear Power Plant and 41.2 m³ of radioactive waste from Temelín Nuclear Power Plant were stored in this repository. Radioactive waste generated in national health sector, industry and research (the so-called institutional radioactive waste) is stored at the Radioactive Waste Repository Richard near Litoměřice. A total of 70.2 m³ of radioactive waste were stored and 2.3 m³ of radioactive waste was received for storage in this Radioactive Waste Repository in the year 2005. Radioactive waste containing natural radionuclides is stored at the Radioactive Waste Repository Bratrství near Jáchymov. A total of 3.2 m³ of radioactive waste were stored in this repository in the year 2005. All stored wastes fulfil the conditions of acceptability for storage approved by SÚJB. Monitoring of repositories confirms their safe function.

In 2005, the Municipality Office in Hrotovice authorized the change in utilization of Dukovany Radioactive Waste Repository to store institutional radioactive waste in this repository under specified conditions.

3.1.3. Spent Nuclear Fuel Storage Facilities

Interim Spent Fuel Storage Facility at DUKOVANY

The Interim Spent Fuel Storage Facility at Dukovany is used for the long-term storage of spent nuclear fuel from the WWER-440 type reactors operated on the premises of Dukovany NPP. The operator of this interim storage facility continuously monitors the fundamental physical quantities, such as the pressure between the primary and secondary cover of each of the CASTOR 440/84 storage casks, the dose equivalent rate in connection with the radiation situation mapping in the interim storage facility and its vicinity, and in addition, above the requirements of the approved Limits and Conditions, the surface temperature of all housed casks. The measured values are in accordance with the approved values. The interim storage facility housed 58 CASTOR 440/84 casks accommodating 4,872 fuel assemblies altogether on December 31, 2005.

Spent Fuel Storage Facility at DUKOVANY

The construction of this new nuclear facility proceeded in the course of the year. The construction was monitored by the surveillance body within the framework of inspections of existing interim storage facility, but the main attention of the surveillance body was paid to the process of type approval of the relevant casks.

Spent Fuel Storage Facility at TEMELÍN

The assessment of the Ordered Safety Report of the Spent Fuel Storage Facility at Temelín was initiated in March 2005. This report was enclosed with the request of the company ČEZ, a.s., for permit for siting this nuclear facility. Some requirements for its amendment arose from the results of the documentation assessment, which were included into its 1st revision. The basis of granting the permit for siting the storage facility included, except for positive results of the assessment of presented documentation by SÚJB experts, positive opinion of the Ministry of Environment of the Czech Republic on the Temelín Spent Fuel Storage Facility construction project and the opinion of the European Commission concerning the plan for radioactive waste disposal in connection with the improvements on the premises of Temelín Nuclear Power Plant in the Czech Republic, in accordance with the Article 37 of the EURATOM Contract. Based on the documents, the SÚJB issued in December the permit for siting the nuclear facility – the Spent Fuel Storage Facility on the premises of ČEZ, a.s., Temelín Nuclear Power Plant.

High-Level Waste Storage Facility

The High-Level Waste Storage Facility on the premises of Nuclear Research Institute Řež, a.s. is continuously used for wet and dry storage of spent fuel generated during the operation of the VVR-S or LVR-15 research reactors. The reconstruction works related to installation of the hot chamber for repackaging of 190 pieces of storage units containing the spent EK-10 nuclear fuel into sealed capsules proceeded in the year 2005. This project is part of the complex public contract for execution of redevelopment works in order to eliminate old environmental loads at the Nuclear Research Institute ÚJV Řež, a.s. funded by the National Property Fund of the Czech Republic. At the end of 2003, the SÚJB granted the permit for

redevelopment, including construction work, construction of the hot chamber and repackaging of the EK-10 fuel. In compliance with the conditions of this decision the preliminary documentation for the installation of the HK EK-10 hot chamber technology was developed in the year 2005. This documentation was subsequently assessed by the SÚJB with positive result. The High-Level Waste Storage Facility housed 240 pieces of IRT-M fuel assemblies and 16 pieces of the EK-10 fuel assemblies in a wet way on December 31, 2005. The storage facility houses 190 pieces of storage units containing the spent EK-10 nuclear fuel in a dry way.

CASTOR 440/84 and CASTOR 440/84M Packages

Considering the fact that the type approval for the package CASTOR 440/84, which is used for the transport and storage of the spent nuclear fuel in the Interim Storage Facility at Dukovany, expired, the package has been re-approved after the assessment of the submitted documentation for the transport and storage of the spent nuclear fuel so that it could be further used.

The administrative procedure regarding the type approval of the package CASTOR 440/84M to be used for the transport and storage of the spent nuclear fuel in new built Spent Fuel Storage Facility on the premises of Dukovany Nuclear Power Plant, started in the year 2004. The type approval process was suspended in the first half of 2004 by reason of the requirement for processing and delivery of independent assessment of the selected parts of the safety documentation and for submission of the modified and amended documentation. After receipt of the revised documentation assessed by SÚJB, this package has been approved for the transport and storage of the spent nuclear fuel.

ŠKODA VPVR/M Package

Within the RRRFR (Russian Research Reactor Fuel Return) international project focused on the transport of spent nuclear fuel of the Russian or Soviet origin from research reactors, the process of the type approval of the transport and storage package Škoda VPVR/M B(U)F type, finished in March by issuing SÚJB decision. The package is intended for road and railway transport and for storage of 36 EK-10, IRT-2M and IRT-3M type fuel assemblies, or 36 stainless steel containers with EK-10 type fuel assemblies or with fuel rods from the EK-10 type fuel assemblies. The above mentioned package will be used in transport of the spent nuclear fuel generated during operation of the VVR-S or LVR-15 reactors from the premises of the Nuclear Research Institute Řež, a.s. to the Russian Federation.

3.1.4. Institutional Waste

The institutional radioactive waste generated in use of radionuclides within the national health sector, industry and research, is handed over by its originators for processing and treatment to the holders of the permit to manage radioactive waste, who can process and treat such radioactive waste. The holders of the relevant permits include the Nuclear Research Institute Řež, a.s., Zam-servis, s.r.o. and ISOTREND s.r.o. The Nuclear Research Institute Řež, a.s. took 13.3 m³ of liquid radioactive waste and 26.2 t of solid radioactive waste from external originators, and handed over 69.2 m³ of radioactive waste to the Radioactive Waste Repository Richard and 3 m³ of radioactive waste to the Radioactive Waste Repository Bratrství for storage. The Zam-servis took 1 m³ of solid radioactive waste from external originators, and handed over 1 m³ of radioactive waste to the Radioactive Waste Repository Richard for storage. The ISOTREND s.r.o. took 0.4 m³ of solid radioactive waste from external originators, and handed over 0.2 m³ of radioactive waste to the Radioactive Waste

Repository Richard and 0.2 m³ of radioactive waste to the Radioactive Waste Repository Bratrství for storage. The holders of the permit to manage radioactive waste satisfy the Limits and Conditions for safe management of radioactive waste and the radioactive waste handed over for storage in the approved repositories fulfils the conditions of acceptability for storage approved by SÚJB.

The SÚJB granted the permit to manage radioactive waste containing natural radionuclides to the company Chemcomex Praha, a.s. in the range of radioactive waste sorting, collection, processing, storage and treatment.

3.1.5. Decommissioning

The SÚJB approved the Proposal for Decommissioning of the Interim Spent Fuel Storage Facility at Dukovany, which was updated after five years in accordance with the requirements of Decree No. 185/2003 Coll. The SÚJB also approved the Proposal for Decommissioning of the Spent Fuel Storage Facility at Dukovany and the Draft Proposal for Decommissioning of the VR-1 Vrabec training reactor.

The 1st stage of decommissioning of the Rožná I. plant - shaft R2 was completed in the area of Dolní Rožínka and the 2nd stage related to decommissioning of the R3 premises was commenced. At the same time, the decommissioning of the KI ZCHU sludge box was in progress. The 2nd stage of decommissioning of the Chemical Mining in the area of Dolní Rožínka is in progress by gradual decommissioning with disassembly and removal of the building. The work performed in the year 2005 was mainly related to assuring operation and maintenance of the sludge box according to the program, withdrawing of free sludge and drainage waters, interception and drainage of waters from the built intercepting ditch and related construction works.

Redevelopment works continued on sludge beds in the area of Mydlovary. The preparation of the upper surface of the sludge bed was carried out on the K I sludge box, including partial covering with the grass mixture, and the recultivation works began on the N-facing slope of the sludge bed. The laying of the ash materials and other recultivation materials into the filler layer of the sedimentation area of the sludge bed was in progress on the K III sludge box. The form of the K IV/D sludge box was completed and prepared for sealing, and a new emergency spillway has been built. Redevelopment works were performed on the K IV/E sludge box using the recultivation materials, including complete or crumb tires.

3.2. Final Assessment

The holders of the permits for the management of radioactive waste manage the radioactive waste in conformity with the requirements of the legislation in force and the Limits and Conditions for safe management of radioactive waste approved by SÚJB. Also the storage of spent nuclear fuel is in conformity with the requirements of the legislation in force and the approved Limits and Conditions for safe storage of spent nuclear fuel; type of the storage packages used is approved by SÚJB. All decommissioning-related works in the above mentioned sites were carried out in accordance with the work schedule and decisions issued by SÚJB; the assessed proposals for decommissioning of nuclear facilities satisfy the requirements of legislation.

4. TRANSPORT OF NUCLEAR MATERIALS AND PHYSICAL PROTECTION OF NUCLEAR FACILITIES

4.1. Transports of Nuclear Materials and Radioactive Substances

A total of 45 transports of nuclear materials or radioactive substances were carried out in the year 2005 on the basis of the SÚJB permit. Five transports of the total number concerned combined air and road international transports of fresh nuclear fuel from the Russian Federation to Dukovany Nuclear Power Plant; two transports were combined sea and railway international transports of fresh nuclear fuel from the USA to Temelín Nuclear Power Plant; two transports were combined road and air international transports of fresh nuclear fuel from the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague to the Russian Federation and vice versa. Furthermore, four internal transports of spent nuclear fuel were carried out at Dukovany Nuclear Power Plant. Two internal transports of fresh nuclear fuel were carried out at Temelín Nuclear Power Plant and nine at the Nuclear Research Institute Řež, a.s. In 2005 also nine international transports of uranium concentrate from the plants DIAMO, s.p. abroad were performed. Besides oxides of natural uranium were transported internally from the factory UJP Praha, a.s. to various glass-works.

In the monitored period there also proceeded two international road transports of surveillance samples, i.e. from Bohunice Nuclear Power Plant and from Mochovce Nuclear Power Plant (both Slovenské elektrárne, a.s., Slovak Republic) to the Nuclear Research Institute Řež, a.s., and further two international road transports of SKIN testing equipment from the ŠKODA JS, a.s. plant in Plzeň to the Paks Nuclear Power Plant (Hungary) and back.

The SÚJB carried out in total 11 inspections of the transports of nuclear materials and radioactive substances in the year 2005, which included eight inspections of international transports of nuclear materials and three inspections of internal transports. On the basis of results of the carried out inspections it may be stated that in the field of the transports of nuclear materials the requirements for nuclear safety, radiation protection and emergency preparedness laid down in Act No. 18/1997 Coll., as amended, were fulfilled as well as the conditions of relevant decisions issued by the SÚJB.

4.2. Physical Protection of Nuclear Facilities

All nuclear facilities and organizations/companies managing categorized nuclear materials have an approved method of physical protection assurance in accordance with the requirements of legal regulations. On the basis of the requests submitted by the holders of the permit for nuclear material management and after the assessment of relevant documentation, seven decisions were issued in the year 2005 approving the physical protection assurance system.

In connection with the completion of works in building the Spent Fuel Storage Facility at Dukovany a program of Complex Testing of its physical protection technical system was approved.

A total of 14 planned and 2 unscheduled inspections were carried out on nuclear facilities and 6 inspections of physical protection assurance of transports of nuclear materials were performed in the course of 2005. The inspection results verified that the inspected persons fulfil the requirements laid down in legal regulations and observe the conditions drawn up in

the decisions issued. They pay permanent attention to this field and the technical facilities are gradually updated.

5. RADIATION PROTECTION

The State Office for Nuclear Safety performs a number of activities in the field of health and environmental protection against the adverse effects of ionizing radiation.

This involves in particular:

- State-governed administration and surveillance in the field of radiation protection at all workplaces with ionizing radiation sources: from nuclear facilities through workplaces with open radionuclide sources to dental X-ray equipment, including type approval of ionizing radiation sources and introduction of radionuclides to the environment;
- Monitoring, assessment and control of personal exposure including exposure to radon and other natural sources of ionizing radiation and exposure in emergency situations;
- Countrywide records of ionizing radiation sources and countrywide records of professional exposures, i.e. radiation personnel are exposed to in connection with the exercise of their professions;
- Development and enforcement of radiation protection regulations including enforcing remedial measures and imposing penalties.

5.1. Ionizing Radiation Sources and Respective Associated Workplaces

Pursuant to Act No. 18/1997 Coll., the workplaces with ionizing radiation sources are classified into four classes, i.e. as workplaces of category I (the least hazardous workplaces) to category IV (potentially the most hazardous workplaces).

5.1.1. Number of Sources and Workplaces

The scope and demanding character of work associated with the performance of the state-governed administration and surveillance in this field may be presented by data on the number of the ionizing radiation sources and workplaces with such sources.

The workplaces of the category IV and the most important workplaces of the category III are as follows:

- Workplaces with nuclear reactors and associated process equipment, particularly 4 operated power reactors at Dukovany Nuclear Power Plant and 2 power reactors at Temelín Nuclear Power Plant, 2 research reactors at the Nuclear Research Institute Řež, a.s. and 1 training reactor at the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague;
- The Interim Spent Nuclear Fuel Storage Facility and the Radioactive Waste Repository on the premises of Dukovany Nuclear Power Plant, the Radioactive Waste Repository in mine Richard near Litoměřice and in mine Bratrství near Jáchymov, and the High-Level Waste Repository at the Nuclear Research Institute Řež, a.s.;

- Uranium-mining industry workplaces – mining and processing of uranium ore in Dolní Rožínka, mine liquidation in the Příbram area and the closed mine Hamr, liquidation of chemical mining in the Stráž pod Ralskem area, and liquidation of sludge beds Mydlovary;
- Workplaces with large industrial irradiators, i.e. workplaces for the irradiation of food (particularly spices), owned by the Artim Praha s.r.o. company and the workplace for radiation sterilization of medical stores owned by the Biostér Veverská Bytíška, a.s. company.

The workplaces producing, or using both open and sealed radionuclide high activity sources, particularly the workplaces of Prague companies Isotope Products Cesio s.r.o., Sorad s.r.o., Isotrend s.r.o., the Czech Metrology Institute, the workplaces of the Nuclear Research Institute Řež a.s., the Nuclear Physics Institute of the Academy of Science of the Czech Republic Řež, the workplace of the VF, a.s. company in Zbraslav and National Institute for Nuclear, Chemical and Biological Protection Kamenná Milín, are among important workplaces of the category III.

The number of important and simple ionizing radiation sources categorized by areas, in which the sources have been used as of December 31, 2005, is outlined in Table Nos. 5.1 to 5.3. Table No. 5.1 indicates the number of workplaces with open radionuclide sources. These sources are usually of a chemical preparation nature and not of a piece product; mostly they are radionuclides with a short half-life, and therefore, their current activity quickly changes over the course of time. The categorization of workplaces with open sources is stipulated by Decree No. 307/2002 Coll., as amended by Decree No. 499/2005 Coll., in relation to workplace equipment and to activity processed at one place or to the form of processed substances and other criteria. The number of workplaces of category I and II changed compared to last year. Some workplaces were combined and some workplaces are indicated as workplaces with minor ionizing radiation sources with the reporting duty.

Table No. 5.1 Workplaces with open radionuclide sources

	Category III	Category II
National health sector	3	112
Industry and other applications	8	74
Total	11	186

Table No. 5.2 indicates the number of facilities containing sealed radionuclide sources. Sealed radionuclide sources have piece character; except for calibrating sources they are not applied directly, but are fitted into respective devices (e.g. crack detection or logging sets, meters). The number of particular sealed radionuclide sources is not identical to the number of facilities with sealed radionuclide sources – in practice such facilities can, either gradually or simultaneously, include more sealed radionuclide sources and not even in the same number (typical for Brach therapy). A number of sealed radionuclide sources are stored in the working storage facility or are intended for disposal. The total number of sealed and actively used radionuclide sources (independent or installed in the facilities) amounts currently to 3352. The working storage facilities contain 960 sealed radionuclide sources and the other 2537 sources are stored awaiting their disposal.

Tab. č. 5.2 Facilities containing sealed radionuclide sources (URZ), actively used

	Facilities with URZ included in the category of simple ionizing radiation sources	Facilities with URZ included in the category of important ionizing radiation sources

National health sector	55	8
Industry and other applications	234	684
Total	289	692

An extensive inquiry was held in July to September 2005, which was aimed at checking licensees possessing the high-active radiation sources. Pursuant to Decree No. 499/2005 Coll., the high-activity radiation sources include sealed radiation source whose activity at the time of manufacture or, in case this time is not known, at the time of its first launch on the market, is equal to or higher than respective activity level stipulated in Annex No. 14 to Decree No. 307/2002 Coll., as amended by Decree No. 499/2005 Coll. Based on this inquiry it was found that 161 licensees possessed such high-activity sources on December 31, 2005 in the Czech Republic. Total number of such high-activity sources is 2129, while only 648 is used in an active manner, 167 above mentioned sources are held in stock, long-term service or used in an active manner outside the Czech Republic and 1314 sources are stored on a long-term basis before their disposal. The SÚJB tries to assure that the sources not used on a long-term basis are stored in a safe manner and disposed of as soon as possible.

Table No. 5.3 indicates the number of radiation generators. The radiation generators are (in compliance with their definition in Act No. 18/1997 Coll., as amended) deemed only such facilities whose operation results in radiation of power exceeding 5 keV. If (such as e.g. X-ray diagnostic apparatus) the combination of one generator with several X-ray tubes is possible, the number of generators is indicated.

Tab. č. 5.3 Number of radiation generators

	Important ionizing radiation sources	Simple ionizing radiation sources
National health sector and veterinary applications	2572	5125
Industry	4	272
Other application	11	79
Total	2587	5476

Pursuant to Act No. 18/1997 Coll., the use of the minor sources does not require any permit, however their reporting to the State Office for Nuclear Safety is necessary (e.g. fire detector). The total number of these recorded sources is nearly 160,000. Unimportant ionizing radiation sources are not even subject to the reporting duty, because the nature of these sources is not hazardous to health and environment; therefore, these sources are not even subject to state records.

5.1.2. Emergency Cases

In 2005 the inspection carried out by SÚJB reported and investigated 52 cases related to ionizing radiation source management or activities resulting in exposure (outside the area of nuclear facilities), which required particular attention of radiation protection inspectors. The following cases were involved:

- 19 vehicle captures (railway wagons, cars) transporting iron scrap; the vehicles were captured by measuring equipment at the entries into metallurgical works, when 12 cases involved the capture of materials contaminated with natural radionuclides (in particular Ra-226), 3 cases involved the capture of material contaminated with

artificial radionuclide (Co-60) and in 4 cases the contaminated material was returned outward without determination of the location;

- 18 captures of collective wagons with municipal waste at the entry into waste incineration plants or trash disposal sites, wherein 11 cases of medical stores (diapers, etc.) contaminated with radionuclides used in therapy and diagnostics at nuclear medicine workplaces (I-131, In-111, Tc-99m, Co-57) were isolated and 7 cases in which objects (dial, switch, box) or materials (uranium ore, debris) containing natural radionuclides (Ra-226) were isolated;
- 2 captures at frontier crossings, where 1 case involved a parcel with minerals (pyrite, bismuthate, fluorite) containing natural radionuclides (Ra-226), and 1 case involved wagon captured at the frontier crossing in Italy and returned to the Czech Republic, where the material contaminated with artificial radionuclide (Co-60) was isolated;
- In 4 cases the finding of an object was reported with the suspicion that it involve an ionizing radiation source, where 2 cases involved contaminated steel tubes in the warehouse of the company handling iron scrap and 2 cases involved objects found in the residential buildings (empty containers);
- 2 cases related to the transport of radioactive substances (car accident, unauthorized break into the vehicle by stranger);
- 7 cases involved direct occurrence of the emergency event at the workplace with ionizing radiation source, where 3 cases concerned emergency events which occurred in working with radionuclide radiation sources (at dismantling of the shielding container, at crack-detection work, at logging work), however, no exposure to humans occurred, furthermore, 1 case involved an emergency situation which occurred at nuclear medicine workplace (unimportant contamination of patient was involved due to sudden sickness), in 1 case the exposure to employee's hand occurred in working with microstructural X-ray apparatus (exposed hand dose estimate was 100 mGy) and in 2 cases fire occurred in buildings, where ionizing radiation sources are located; however, no radioactivity escaped in any case.

Emergency events, which occurred at workplaces with ionizing radiation sources, were handled in accordance with the approved in-site emergency plans and in conformity with the SÚJB instructions. None of the above mentioned cases involved excess exposure to humans.

In cases where the presence of contaminated materials (substances, objects) was confirmed, such materials were, based on SÚJB decision, found, isolated, safely stored or housed, or escaped to the environment.

5.2. Assessment and Inspection Activities

A crucial part of the work carried out by the SÚJB Radiation Protection Department concerns the assessment of requests for permit to manage ionizing radiation sources and other permits issued pursuant to Act No. 18/1997 Coll., and the verification of observance of the specified conditions for safe operation of ionizing radiation sources and their associated workplaces. In addition to regulation of the utilization of artificial ionizing radiation sources, the activity is recently focused more on activities related to increased exposure from natural radioactive substances including exposure as a result of radon occurrence in buildings.

5.2.1. Permit Granting and Revocation

Administrative activities of the State Office for Nuclear Safety in the field of radiation protection predominantly consist in issuing permits to manage ionizing radiation sources and issuing permits to operate the workplaces of category III or IV pursuant to Act No. 18/1997 Coll. This procedure concerns over 5,700 legal entities in the Czech Republic and most of them act in the field of health services.

In 2005, in association with the execution of state-governed administration, the Radiation Protection Department issued 2,271 decisions. A comparison of the total number of decisions issued in 2005 with previous years (2,879 decisions in 2004; 3,467 decisions in 2003; 7,555 decisions in 2002; 2,341 decisions in 2001; 2,381 decisions in 2000) shows that upon an increase in the requirements for issue of the permits in 2002 in connection with Act No. 13/1997 Coll., which amended Act No. 18/1997 Coll., the situation returns to a routine state. However, new increase in licensing activities may be expected in the year 2007, when most of the existing permits expire.

In 2005 there was no need to revoke any permits issued by the Radiation Protection Department.

In relation to provisions of Section 6 of Act No. 18/1997 Coll., the SÚJB issued 47 opinions within the Radiation Protection Department in the year 2005. The overall majority of cases involved opinions on excess of reference values of natural radionuclide content in water supplied for public drinking-water supply, in produced and imported building materials and on conclusions included in the presented optimisation studies. Furthermore, 41 opinions were issued within the framework of the Radon Program of the Czech Republic (Section 5.3.2.2.).

5.2.2. Evaluation of Inspections

In 2005, as in previous years, inspection activities were carried out in two ways - either on the basis of regional competence of the inspected entity (inspections performed by inspectors of the Regional Centers of the State Office for Nuclear Safety) or on the basis of specialized inspection scope (inspections carried out by Specialized Inspection Teams - SIS). This procedure was verified in past years as very effective, which enables performance of required number of inspections with a limited number of inspectors and observance of the necessary expert level of the inspections.

The activity of Specialized Inspection Teams is focused on specific types of ionizing radiation sources and their workplaces where it is required to reach higher level of radiation protection practice integration throughout the country (e.g. nuclear medicine workplaces and workplaces with open radionuclide sources of category II and higher, nuclear power, radiotherapy workplaces, etc.). This system of inspections is supplemented with **inspections carried out *ad hoc*** by formed inspection teams, particularly for time-consuming and material-intensive inspections at the workplaces of category III and IV.

The four-degree evaluation system is used in order to evaluate the inspection activities. This system was put into practice in 2003 and unified the practice of execution and evaluation of inspections within the whole Office as much as possible. Based on the experience and the most frequent failures, the following criteria for inspection evaluation were determined:

Degree 1

Only small defects were detected, failure to radiation protection requirements that do not impede safe performance of permitted activities resulting in exposure, without any further conditions.

Degree 2

Serious defects detected, the inspected person can, under certain (supplementary) conditions (of mode), proceed with activities resulting in exposure.

Degree 3

Defects detected that impede safe performance of activities resulting in exposure; some activities resulting in exposure must usually be limited or suspended until remedial measures are taken.

Degree N

Sufficient information is not available to evaluate the state; the inspection was not or could not be evaluated, e.g. due to insufficient background papers submitted by the inspected person, or termination of activities.

The inspection activities of the Regional Centers of the SÚJB are executed on the basis of the approved half-year plans drawn up in the individual Regional Centers, while the following principles are followed:

- At least once in two years carry out inspection at all workplaces with important sources used in the industry;
- Give preference of the inspection of important ionizing radiation sources to inspections of single sources in a planned way, particularly in the field of health service;
- In the group of single sources, give priority to inspections at "problem-related" workplaces, where deficiencies may be expected.

In the field of radiation protection, a total of 1,260 inspections were carried out in the year 2005, of which 932 inspections were executed directly by the Regional Center of the SÚJB at the holders of the permit to manage single and important ionizing radiation sources outside the area covered by Specialized Inspection Teams (hereinafter referred to as SIS). A total of 88 inspections were carried out within SIS, which related to the field of natural sources, industrial sources, radiotherapy, nuclear medicine and open radiation sources.

A total of 79 inspections were carried out in the field of nuclear power, of which 20 inspections proceeded at suppliers. At both NPPs, main attention was given to observance of mode measures, to reconsideration of events in the course of the year and to adherence to radiation protection principles at supplier. No event, which occurred at NPP, was rated with Degree 3. An increased attention of the SÚJB was paid to repeated occurrence of active particles within the controlled area of Temelín NPP; all such cases were analysed in detail, discussed with the operator and necessitated a change in operating procedures for the purpose of elimination of such cases or their early detection in workplace monitoring. Particular attention was given to increase in tritium activity concentration in the pump well at Dukovany NPP. The operator took measures (replacement of sewer section, increase of pump well sampling frequency and long-term monitoring of tritium content in tertiary circuit water), and once they were implemented, there was no increased tritium activity concentration recorded in the pump well to the end of the year.

There were 57 inspections performed in the field of uranium and other mining activities and old loads (within the RC Kamenná sphere of authority) that were mainly focused on observance of mode measures at workplaces, on adherence to conditions for mine water release from former works into the environment and for radionuclide content at dumping aggregate manufacturers. No inspection was rated with Degree 3, and deficiencies detected in 10 cases of inspections rated with Degree 2 were immediately removed.

There were 159 basic inspections and 18 specialized inspections carried out in the field of natural ionizing radiation sources in the year 2005.

Inspection activity in this field, carried out according to priorities specified in the previous period, was focused on problem-related cases, on excess of reference and limit values in the water supplied to public drinking-water supply and building materials. The result of inspection was rated with Degree 2 at 58 % of the inspected manufacturers and suppliers of building products (48 % in the year 2004), which was in most cases due to excess of reference values in building materials, or by reason of unreported results of systematic measurement and assessment of natural radionuclide content in building materials. In the course of the year, eight inspections were carried out at the members of the Brick Association of Bohemia and Moravia, during which it was found that the inspected members of this association in manufacturing brick-ware fulfil the conditions of the optimisation study presented to SÚJB in the year 2003.

In the case of inspections carried out at suppliers of water intended for public drinking supply, deficiencies were detected in 86 % of cases (63 % in the year 2004). The majority of the inspections are rated with Degree 2, especially due to excess of OAR reference level or total alpha activity concentration in supplied water or due to deficiencies in performance of systematic measurement and assessment of natural radionuclide content in water.

In the cases of excess of reference values in buildings materials and supplied water, the SÚJB requests presentation of an optimisation study assessing the costs of natural radionuclide content reduction and expressing health injury in terms of finance. In the cases of excess of limit values of natural radionuclide content in supplied water, the content of natural radionuclides is required to be reduced.

On the basis of results of the inspections, a total of 13 decisions were issued in the course of the year 2005 on imposition of remedial measures (for 11 water suppliers, 2 building manufacturers).

The situation at workplaces with possible occurrence of significant increase in exposure from natural sources was gradually improving in the year 2005. The portion of inspections rated with Degree 1 was gradually increasing here. In 2005, there were 74 % of inspections rated with Degree 2 (it included 85 % of inspections in the year 2004) due to unsecured measurements that will allow determination of annual effective dose for personnel (Section 6 Par. 3 Letter b) of Act No. 18/1997 Coll.).

There are inspections carried out at licensees on a regular basis in order to provide services in the field of natural ionizing radiation sources. The inspections are performed by Inspection Teams within the specialized inspection activity. There are deficiencies detected on repeated occasions in the adherence to the approved guidelines and in the quality of measuring protocol on repeated occasions. The inspection activity contributes thus to the maintenance of high-grade service level.

Four inspections were carried out at the holders of the permit for special training of selected employees, when 1 of them was rated with Decree 2.

In 2005, the inspections aimed at fulfilling of provisions of the approved traumatology plan at Dukovany and Temelín Nuclear Power Plants were carried out.

Total number of inspections carried out in the radiation protection section slightly decreased (approximately by 12 %) as compared with the same period of the year 2004 (1,411 inspections in total), which is mainly caused by focus of inspection activity on more exacting inspections of workplaces, which are "more important" in terms of radiation protection.

Table No. 5.4. Assessment results of inspections in the field of radiation protection in 2005

Radiation protection area	Number of inspections rated with Degree (%)			
	1 or 2	3	N	Total
Artificial ionizing radiation sources	1047 (96.3)	17 (1.6)	19 (1.8)	1083
Natural ionizing radiation sources	154 (87.0)	21 (11.9)	2 (1.1)	177
Total	1201 (95.3)	38 (3.0)	21 (1.7)	1260

The prevailing causes of Degree 3 rate of the inspected persons managing ionizing radiation sources were the absence of valid permit issued pursuant to Section 9 of the Atomic Act, or deficiencies detected by the inspections were not removed within the prescribed time, or the procedures according to the approved documentation were not followed, or there is no steady surveillance of nuclear safety provided by person with direct responsibility for radiation protection in case of medical exposure, or self-assessments (long-term stability tests) conducted by personnel without valid authorization of special professional qualification.

A comparison with the 2005 results in the field of artificial ionizing radiation sources shows maintenance of the radiation protection level at the inspected entities: in 2004, 96.7 % of the inspected entities were rated with Degree 1 or 2 in comparison with 96.3 % in the year 2005. In a total of 19 cases (i.e. approximately 1.8 %), the inspection could not be evaluated (evaluation N), by reason of termination or non-performance of activities subject to inspection, death of inspected person or insufficient background papers for inspection evaluation.

In summary it may be stated that the level of radiation protection requirement assurance in the year 2005 did not fall away against the preceding period at obligatory persons in the field of artificial and natural ionizing radiation sources and is on satisfactory level.

Based on the assessment of inspection activities in the Radiation Protection Department and with the use of Decision Registry and Sources Registry databases, the plan for inspection activities was drawn up for the year 2006, where main attention is given in the field of:

- *Nuclear power* to observance of mode measures at both NPPs and to adherence to legislative requirements at suppliers;
- *Uranium activities, old loads and mining activities* to the assessment of the impact of radionuclide discharges to the environment and to the fulfilment of the approved monitoring programs;
- *Radio-diagnostics* to regular inspection of mammography workplaces (intended for screening as well as indicated examinations);
- *Nuclear medicine and open radionuclide radiation sources* to personnel protection in connection with the adoption of methods with PET radionuclides and to compliance with Quality Assurance Programs;
- *Radiotherapy* to consistent introduction and control of quality system, observance of procedures according to the approved documentation and activity of supervising persons;
- *Other types of artificial ionizing radiation sources management* to the inspection of the entities executing the import, distribution, production and export of the ionizing radiation sources with stress put on radionuclide sources, and to utilization of sealed radionuclide sources in industrial applications;
- *Natural ionizing radiation sources* to the continuation of inspections at measuring companies; in other fields of natural ionizing radiation sources to the cases of excess

of limit and reference values and optimisation of natural radionuclide content in water and building materials and to observance of duties of the owners of workplaces, where significant increase of exposure from natural sources can occur.

In general, the inspection activities will be more focused on the "radiation culture" at the workplaces with ionizing radiation sources.

Increasing attention is also given to improvement and integration of inspection activity performance, i.e. increase of professional level of inspectors.

5.3. Exposure Control

Great attention has been, for many years, given to radiation personnel and population exposure control on as low as reasonably achievable level, while taking into consideration economic and social aspects.

5.3.1. Personnel Exposure Control

Personnel exposure at workplaces with ionizing radiation sources in 2005 was monitored by five currently existing dosimetric services licensed by SÚJB - the company Celostátní služba osobní dozimetrie Praha, s.r.o., dosimetric services of Dukovany and Temelín NPPs, dosimetric service of the Nuclear Research Institute Řež, a.s., and dosimetric service of the National Institute for Nuclear, Chemical and Biological Protection that assures personnel monitoring in the uranium-mining industry (Diamo, s.p.). A license was also granted to the Dosimetry Institute of the Academy of Science of the Czech Republic for the execution of dose calculations for aviation personnel. In 2005, the SÚJB organized comparison measurements and all such services participated therein. A total of about 20,000 employees with ionizing radiation sources were monitored, as with every year. The doses of these employees are recorded in the Central Registry of Occupational Exposure kept by the SÚJB. The preliminary evaluation of doses shows the following:

- A total of 1,933 employees were monitored in 2005 at Dukovany NPP using dosimeters (of this number 579 employees were the skeleton personnel of Dukovany NPP and 1,354 - supplier employees); the cumulative collective effective dose was 735.83 mSv (including all doses exceeding 0.05 mSv); the average personal effective dose was 0.56 mSv and the highest annual individual effective dose was 7.32 mSv (detected within an employee of a supplier organization).
- A total of 1,696 employees were monitored in 2005 at Temelín NPP using dosimeters (of this number 502 employees were the skeleton personnel of Temelín NPP and 1,194 supplier employees); the cumulative collective effective dose was 452.65 mSv (including all doses exceeding 0.05 mSv); the average personal effective dose was 0.35 mSv and the highest annual individual effective dose was 9.51 mSv (detected within an employee of a supplier organization).
- In the uranium-mining industry, a total of 328 employees were monitored at the underground workplaces of GEAM Dolní Rožínka. The cumulative collective effective dose was 3.1 Sv; the average personal effective dose was 8.99 mSv. The highest individual effective dose in 2005 was 33.28 mSv (underground); a total of 479 employees in the uranium-mining industry were monitored with a cumulative collective dose of 3.5 Sv.
- In other industrial applications, about 2,300 employees were monitored whose average individual effective dose, depending on their professions, ranges from 1 to 2

mSv; professions with higher doses include crack detection (1.2 mSv) and logging works (1.8mSv).

- At medical with ionizing radiation sources, doses were evaluated for almost 12,000 employees. Of this number, nearly 50 % had an annual individual effective dose below recording level; the remaining employees showed an average annual individual effective dose of 1.1 mSv; while with certain professions the average annual individual effective dose is higher as usual, e.g. with doctors - cardiologists ranged about 2.3 mSv.
- Personnel of specialized professions, such as service and inspections at the sources, which amounts approximately to 960, achieved an average annual individual effective dose of about 0.5 mSv.

The collective effective dose in 2005 was estimated at 13.1 Sv and the average individual effective dose per single monitored employee at 0.67 mSv.

Decree 419/2002 Coll., on personal radiation ID cards, lays down duty since 2004 to equip the "external personnel" (i.e. the personnel of category A working on a contract basis in the controlled area of another operator) with a personal ID card. The radiation ID cards are to be issued and recorded by the SÚJB. Practice confirmed that the system of personal radiation ID cards helps to ensure a proper and complete evaluation of doses to external personnel. On the basis of assessment of information included in the cards, the CRPO data was updated in the year 2005. Based on the request from 81 licensees, the Office issued 2,698 of the radiation ID cards so far (which included two Slovak companies and 97 external employees working abroad in the year 2005).

In 2005 three cases of single-shot (for the relevant inspection period) exposure of personal dosimeters with doses exceeding 20 mSv were examined. Dosimetric services reported six cases when holders reported impersonal exposure of the dosimeters due to improper handling. This involved particularly national health sector personnel.

Within the evaluation of annual doses in 2004 (the Central Registry processes annual data only in the second quarter of the year following after the year, for which the data is provided, and in connection to data obtained from dosimetric services) 43 cases were detected in which the values of personal doses exceeded 20 mSv. Of this number 20 cases involved personnel in the uranium-mining industry, where inspection and control of personal doses is assured on a continuous basis and these doses are thus not re-examined, and 20 cases involved personnel in the national health sector, where all cases were reduced to attenuation with a protective apron. One case of the total number involves the field of crack detection – 29 mSv, two cases are involved in the company manufacturing and distributing radioisotopes.

The inspection activities continue for the third year at the workplaces, where significant increase of exposure from natural sources can occur, i.e. at the workplaces with estimated increased radon occurrence in the air or at the workplaces where the NORM or TENORM (Technologically Enhanced Normally Occurring Radioactive Materials) type materials are managed, which are stipulated by Decree No. 307/2002 Coll. The commencement of the inspection activities related to the establishment of entities with permits to perform services of personal dosimetry at determined workplaces. Natural radioactivity measurements are gradually commenced at the workplaces, which will subsequently enable specification of effective doses for personnel at such workplaces and assess thus their radiation load from working activities. Knowledge from the existing inspection activity became the basis for preparation of the amendment to Decree No. 307/2002 Coll. (Decree No. 499/2005 Coll.). At the same time, the draft Guideline was prepared for measurements at workplaces where

significant increase of exposure from natural sources can occur and specification of effective dose.

5.3.2. Population Exposure Control

Great effort, which was made in the reduction of population exposure, was focused on the reduction of natural exposure, in particular radon exposure in buildings that form a predominant part of the cumulative effective dose to which the Czech Republic's population is exposed. This component of personal exposure has a very wide range, and higher exposure levels are, based on experience of the past years, controllable with reasonably achievable cost. Another significant part of the population exposure, on reduction of which SÚJB focused its effort, involved the medical exposure. This concerns the radiation, to which patients who undergo medical examinations with the use of ionizing radiation sources are exposed.

5.3.2.1. Medical Exposure

The technique of monitoring and evaluating population exposure from sources applied in medicine is dealt with, as in previous years, mostly in cooperation with the National Radiation Protection Institute in the field of radio-diagnostics and the Teaching Hospital in Olomouc in the field of nuclear medicine. The State Office for Nuclear Safety receives, from the General Health Insurance Company, data files on examinations performed using ionizing radiation sources. Based on this data the Office carries out statistical evaluations that serve to manage the exposure from the medical use of ionizing radiation sources. In 2005, the science and research task proceeded with a view to develop detailed technique for evaluation of doses in the radio-diagnostics with respect to individual workplace instrumentation.

As part of the harmonization of the law of the Czech Republic with the law of the European Union in the field of medical exposure, the provisions of the Council Directive No. 97/43/EURATOM were enforced in particular into the regulations on health service personnel education (implementing decrees to Act No. 95/2004 Coll., and Act No. 96/2004 Coll.). Attention was primarily given to the assessment of the teaching and practical training and placement of radiological physicists that shall be, from January 1, 2007, assured in a higher number not only for the radiotherapy and nuclear medicine departments, but also for radio-diagnostic departments. On request of the Ministry of Health of the Czech Republic the program of studies at schools for the instruction of bachelor's radiological medical fields were reviewed. In connection with the SÚJB gestion for the implementation of the Council Directive No. 97/43/EURATOM, repeated meetings were held between the representatives of the Ministry of Health of the Czech Republic, committees of societies of the Czech Medical Association of J. E. Purkyně – the Radiological Association, Nuclear Medicine Association, the Association of Radiation Oncology, Biology and Physics, the Association of Radiological Laboratory Technicians and Assistants, with the General Health Insurance Company and other health service institutions. The representatives of the SÚJB participated in the workshops called by the Ministry of Health of the Czech Republic in order to coordinate the task "Radiation protection when providing health service". As part of this task four grants of the Ministry of Health of the Czech Republic were discussed, which are focused on the elaboration and implementation of medical exposure standards, including the methods of determination and evaluation of patients' doses and the introduction of verification of these procedures by the clinical audits.

The State Office for Nuclear Safety personnel worked as members of expert commissions of the Czech Ministry of Health and the Czech Medical Association of J.E. Purkyně, of which it is necessary to name the Commission for Breast Tumors Screening, the Commission for Allocation Assessment of Select Sanitary Engineering Instruments and the Commission for the Assessment of Occupational Diseases.

Based on data provided by the General Health Insurance Company on examinations, during which the ionizing radiation sources were used for diagnostic purposes, the Central Database of Medical Exposures was created. For the field of X-ray diagnostics and nuclear medicine, data processing enables detection of frequency of the individual examination types for selected age groups of patients as well as depending on their gender. Data are anonymous in relation to persons and workplaces. The last processed period covers the year 2003. In the case of nuclear medicine, each and every examination may be assigned quantity of applied radiopharmaceutical. On the basis of order placed in the year 2005, when the pilot study was implemented, the examination database can be linked to the source database.

5.3.2.2. Exposure from Natural Sources

The criteria for the control of population exposure from natural sources emanated from Act No. 18/1997 Coll. and Decree No. 307/2002 Coll., establishing, inter alia, reference values crucial for the assessment of natural exposure risk level. The control of population exposure from natural sources relates primarily to the exposure from radon and other natural radionuclides in houses, in water supplied for public water supply and in building materials.

In the field of the control of population exposure from radon and its decay products in buildings, the SÚJB performed particularly the duties defined by the resolution of the Czech Republic No. 970 dated October 7, 2002 on Czech Radon Program. In addition to fulfilment of its own tasks resulting from the Radon Program, the State Office for Nuclear Safety coordinates the collaboration of other entities participating therein – ministries and regional offices. The Report on the Czech Radon Program Fulfilment for 2000 - 2004 was drawn up by the SÚJB in the year 2005 in order to provide information to government ministers. The report includes an overview of material fulfilment of individual tasks of the Radon Program including withdrawal of financial means and summary of associated research and development activities. The report states that the individual tasks of the Radon Program are fulfilled on a continuous basis and lays down the strategy for its fulfilment for the period 2005 - 2009.

In 2005, the SÚJB in this field particularly:

- Proceeded, in cooperation with assigned personnel of regional offices and with National Radiation Protection Institute personnel, in the target search for inhabitants residing in exceptionally high radon risk areas;
- Cooperated with the departments participating in the Radon Program;
- Laid down, in cooperation with the National Radiation Protection Institute, the modified strategy principles for search for the objects with higher radon activity concentration in the air, which will, using the map data, improve search efficiency and facilitate the search of the most risk objects until the year 2009;
- Assured the issue of opinions to the house owners, which are part of the documentation for allocating the financial contributions for radon curative measures (in total 23 opinions), and in cooperation with the National Radiation Protection Institute, issued opinions on effectiveness of implemented radon curative measures before the payment of a grant (12 opinions);

- Assured opinions for regional offices, which were part of the documentation for allocating the state grant for recovery of water mains supplying drinking water intended for public supply. In 2005, six applications were appraised and four water mains were recovered; table below indicates the number of curative measures from the means for the Czech Radon Program;
- In cooperation with other departments, participated in assignment of development and research tasks within the framework of the Czech Radon Program and secured assessment of their performance. In 2005, covering of the territory of the Czech Republic with maps of the lands' radon index was completed and the development of effective radon curative measures in the buildings continued.

Table No. 5. 5 Number of objects allocated with the grant from the state budget for implementation of radon curative measures

Number	2000	2001	2002	2003	2004	2005
Buildings	265	184	220 ¹⁾	14 ²⁾	16 ²⁾	12
Schools	17	13	7	0 ³⁾	0 ³⁾	1
Water mains	22	9	13	8	2	4

¹⁾ Due to state administration reform, the district offices were not provided with sufficient data in all cases, therefore, accurate data is not available, and the values are an estimate.

²⁾ Change in method for allocating the state grants for curative measures in the buildings from 2003.

³⁾ Much of the educational facilities were recovered before 2000; there is only exceptional occurrence of schools with exceeded OAR reference value at present.

5.3.3. Assessment of Exposure Consequences

In 2005, the SÚJB, in cooperation with the National Radiation Protection Institute, assessed a total of 78 suspect cases of occupational disease, which included:

- With uranium mine personnel this concerned 61 cases of lung cancer and 14 cases of other diseases (five skin cancer, one malignant lymphoma, two myeloid leukaemia, one each of mediastinal cancer, stomach cancer, oesophagus cancer, bladder cancer, two kidney cancer). In 22 cases of lung cancer, four cases of skin cancer and one case of myeloid leukaemia, the probability of causality between the disease and work in underground uranium mines was assessed as predominant; in five cases of lung cancer and one case of skin cancer, it was assessed as boundary. In other cases, the connection between the disease and work in the ionizing radiation risk area was not proven.
- With the personnel of other professions this concerned a total of three cases of assessed diseases – one case each of lung cancer (one employee of uranium mine), myelofibrosis and leucopenia. Causality between the work in an ionizing radiation risk area and the disease was proven only in the case of lung cancer.

The cooperation in the field of assessment of suspect of occupational disease with the state-owned enterprise s.p. Diamo, Czech Prison Service, the representatives of Occupational Medicine Association, Occupational Disease Association of the Czech Medical Association of J. E. Purkyně and other experts and institutions continued. The representative of SÚJB participates in the work of Standing Committee on Evaluation and Control of Occupational Risks, Labour-Medical Care and Rehabilitation with the Government Council for Occupational Health and Safety.

The dose estimate to the fetus as a result of diagnostic examination of the mother was measured in a total of 40 cases. All requests were from radio-diagnostic examinations. With

no patient the dose estimated was higher than 20.0 mSv; in eight cases the dose ranged from 5.0 to 10.0 mSv, and in other cases (32) it did not reach 5.0 mSv. There is also interest for dose estimate with mothers who held their child during examination. The assessment was submitted - mostly within 24 hours - to the applicants.

The cooperation with the Ministry of Health of the Czech Republic in assuring the system of rendering assistance and special medical assistance to persons irradiated during radiation accidents continued by maintaining contacts with the established "Special Health Care Centers" (Bulleting of the Ministry of Health of the Czech Republic No. 12/2003) and the discussion with the Ministry of Health of the Czech Republic on the method of iodine prevention for the territory of the Czech Republic outside the emergency planning zone continued.

6. EMERGENCY PREPAREDNESS

6.1. Assessment and Inspection Activity

In 2005, the continuous preparedness of the entire emergency organization of emergency response was ensured at Dukovany and Temelín NPPs, when the preparedness of the whole shift of the emergency response organization personnel was checked in a total of 130 cases at Dukovany and Temelín NPPs each in the form of control communication or call to exercise. The exercises reached the success rate of 100 % at both nuclear power plants. In 2005, one emergency event classified with Degree 1 occurred at Dukovany NPP for technological purposes. There was no emergency event occurrence at Temelín NPP.

According to the annual plan of the ČEZ, a.s., NPD emergency exercises, a total of 12 exercises were planned for the year 2005, which included seven exercise at Dukovany NPP and five exercise at Temelín NPP. These exercises were carried out in the planned scope. The exercise objectives were fulfilled in all cases and detected deficiencies were handled in a standard way, i.e. their removal by the relevant divisions.

Both nuclear power plants conducted check of technical facilities' functionality, as well as verification of emergency preparedness in compliance with the requirements of Decree No. 318/2002 Coll. In 2005, all trainings on emergency preparedness stipulated by Decree No. 318/2002 Coll., were held at nuclear power plants, i.e. it concerned primarily basic training on personnel and contractors emergency preparedness and periodic training for shift engineers, shift personnel, members of emergency organization of emergency response and members of shelter teams.

For the purpose of assessing the state of emergency preparedness of nuclear facilities and other workplaces, the SÚJB inspectors carried out a total of 8 inspections in the course of 2005; two of them were conducted at Dukovany NPP, one at Temelín NPP, one at the workplace of the Radioactive Waste Repository Authority, one at the workplaces of the Nuclear Research Institute Řež, a.s., one at the workplaces of the VF, a.s., Černá Hora, one at the workplace of ÚJP Praha, a.s., and one inspection at the workplace of VUT in Brno. It was found that the emergency preparedness at the inspected workplaces is in compliance with the relevant provisions of Act No. 18/1997 Coll.

6.2. Crisis Management

The representatives of the SÚJB participated in the work of the Central Crisis Headquarters and they actively participated in the work within the relevant crisis management bodies of the Czech Republic (in particular within the State Security Board, in the Civil and Emergency Planning Committee and its ad hoc expert working groups and in the expert working groups of the Ministry of Defence). The cooperation as regards the preparation of documents concerning crisis management of the Czech Republic continued.

The SÚJB crisis plan, which is the crucial document of the crisis management, and which was approved on November 12, 2004 and then issued, was revised in Autumn 2005 and the work required for its update started.

At the end of 2005, an update of staffing of the Crisis Headquarters was implemented following the assessment of the existing planning system and performance of shifts of the Crisis Headquarters.

In Autumn 2005, the SÚJB attended the meeting with the representatives of regional offices and municipal offices with an extended sphere of authority located in both Emergency Planning Zones organized by ČEZ, a.s., and held at both NPPs. The representatives of territorial state administration present at such meetings were informed of current topics related to the emergency preparedness and crisis management from the viewpoint of SÚJB.

Also in 2005, the SÚJB together with Fire Rescue Service of Prague took part in the preparation process of students, within the conceptual framework of education in the field of human protection in case of emergency events.

6.2.1. Crisis Headquarters Activity

In the course of 2005, the training of the members of SÚJB Crisis Headquarters was held; a total of 16 various topical units were concerned.

In the course of 2005, some program applications were innovated and new means were developed designed for the activities of the Crisis Headquarters of SÚJB at the workplace of the Emergency Response Center, which, by virtue of Act No. 240/2000 Coll., serves as the crisis management workplace, and assures among others the technical and organizational support to the Crisis Headquarters of the State Office for Nuclear Safety. The implementation of the RODOS system in the Czech Republic executed in the form of Phare project was completed.

In the course of the year, the continuous testing data transmissions from both nuclear power plants continued. The system of servers built in the year 2004 and enabling data acceptance from both NPPs and from all providers of data from the Radiation Monitoring Network (RMS) designed for the activities of the Crisis Headquarters of SÚJB at both the central and the back-up workplace functioned reliably in the course of the year 2005. Concurrent storage of selected data from RMS into the main and back-up systems was initiated in 2005.

6.2.2. Emergency Exercises

In 2005, the Nuclear Energy Agency (NEA) within the Organization for Economic Cooperation Development (OECD) organized series of INEX 3 emergency exercise proposed as "Staff Exercise" to be held in the individual countries within the specified period and in the extent chosen by the country concerned. In compliance with the provisions of the 27th meeting of the Civil and Emergency Planning Committee held on March 22, 2005, No. 213, and upon agreement between the State Office for Nuclear Safety, the Ministry of Interior - the

General Directorate of Fire Rescue Service of the Czech Republic and the Nuclear Regulatory Authority of the Slovak Republic, the international INEX 3 exercise was organized with the aim to train the radiation monitoring network mobile groups and carry out the INEX 3 Staff Exercise recommended by the Nuclear Energy Agency within the Organization for Economic Cooperation Development NEA/OECD, in cooperation with the Czech Republic and the Slovak Republic. It was decided to hold the INEX 3 emergency exercise on September 12 – 16, 2006. The exercise was organized by the SÚJB in cooperation with the Ministry of Interior - the General Directorate of Fire Rescue Service of the Czech Republic and was held at the Fire Protection School in Brno – Líšeň. The first part of the exercise included emergency exercise of all mobile groups of the Czech Republic involved in the activity of the Radiation Monitoring Network of the Czech Republic and two mobile groups from the Slovak Republic. The mobile groups (29 in total) fulfilled both the tasks related to monitoring of the area contaminated with radionuclides on the route and the tasks associated with the detection and identification of found or captured ionizing radiation source. The Crisis Management Authorities of the South Bohemia Region, the South Moravia Region, the Region of Vysočina, the Crisis Headquarters of SÚJB and the Operating Control Group of the Commission of the Government of the Slovak Republic for Radiation Accidents participated in the second part of the exercise. The aim of the activities of the Crisis Headquarters of SÚJB was to assess the long-term consequences of territory contamination and elaborate proposals for contingent follow-up protective measures (foodstuffs and water consumption control, decontamination, etc.), including submission of such proposals to the Crisis Management Authorities of the regions and the ORS SR. The aim of the activities of the Crisis Management Authorities of the regions and the Operating Control Group of the Commission of the Government of the Slovak Republic for Radiation Accidents was to practice, based on recommendations presented by the Crisis Headquarters of SÚJB, execution of recommendations for institution of protective measures, consideration for their implementation and then preparation of decisions on implementation of protective measures or their issue. All planned objectives of both parts of the exercise were accomplished; the exercise produced an amount of knowledge that was summarized at the end of the year 2005 and the solution of identified problems was initiated.

The Crisis Headquarters of the State Office for Nuclear Safety further participated in the emergency exercises organized by other persons, e.g. the EU/NATO "CME/CMX 2005" exercise, the "Convex 1a" exercise organized by IAEA in January and July 2005, the "Convex 2a" exercise in April and October 2005, the "Convex 2b" exercise in August 2005, the "Convex 2c" exercise in February 2005, the "Convex 3" exercise in May 2005. In September 2005, the Crisis Headquarters of the SÚJB participated in inland exercise "Havárie 2005" aimed at practicing the deployment of forces and means of the Armed Forces of the Czech Republic in solving non-military crisis situation related to emergency at Dukovany Nuclear Power Plant. Another inland exercise, the "Podzim 2005" exercise, was held in September, and the Crisis Headquarters of the SÚJB participated therein. This exercise was aimed at practicing the joint intervention of the Integrated Rescue System components in search and disposal of booby-explosive-system on the premises of the common bus and train station in Prague - Holešovice and the removal of consequences of terrorist bomb attack in Prague - in the underground area of the "Náměstí Republiky" subway station and on the train station in Kralupy nad Vltavou on the territory of the Central Bohemia Region.

7. MANAGEMENT OF THE RADIATION MONITORING NETWORK IN THE CZECH REPUBLIC

Pursuant to the so-called Framing Contracts made with individual departments stipulated in Section 46 of Act No. 18/1997 Coll., i.e. Ministry of Finance, Ministry of Defence, Ministry of Interior, Ministry of Agriculture and Ministry of Environment, the implementing contracts were concluded with a majority of the organizations within the sphere of action of the above mentioned departments, which ensure activities of specified RMS components. At the same time, the preparation of the implementing contract concluded with the Armed Forces of the Czech Republic continued (the contract was concluded on January 5, 2006). There are currently concluded contracts between the State Office for Nuclear Safety and the Czech Hydrometeorological Institute (the Early Warning System, measuring points of air contamination, measuring points of water contamination and meteorological service), the T. G. Masaryk Water Research Institute in Prague (measuring points of water contamination), the Customs General Headquarters (mobile groups and measuring points at the frontier crossings), the General Directorate of Fire Rescue Service of the Czech Republic (mobile groups), the Police of the Czech Republic (mobile groups), the State Veterinary Administration of the Czech Republic in Prague (measuring points of foodstuff contamination), the Agricultural and Food Inspection Authority (measuring points of foodstuff contamination), the Central Institute for Supervising and Testing in Agriculture (measuring points of foodstuff contamination), the Forestry and Game Management Research Institute (measuring points of foodstuff contamination) and the Armed Forces of the Czech Republic.

Therefore, monitoring of the radiation situation within the Czech Republic was assured in the year 2005 by the State Office for Nuclear Safety, National Radiation Protection Institute, the above mentioned organizations and the holder of permit to operate the nuclear power plants, i.e. ČEZ, a.s.

Within the framework of European Commission preparation for inspections according to Articles 35 and 36 of the Treaties on EURATOM, the SÚJB drew up, according to the European Commission questionnaire, documentation containing information on radiation monitoring assurance within the Czech Republic at the beginning of the year 2005. In the second half of the year 2005, the SÚJB drew up additional documentation to the European Commission questionnaire containing information on radiation monitoring within the Czech Republic for the purposes of the AIRDOS project.

In connection with the accession of the Czech Republic to the European Union, the inspection of monitoring of effluents in the vicinity of the nuclear facility was carried out in compliance with the provisions of Articles 35 and 36 of the Treaties on EURATOM in March 2005. The inspection was carried out by the European Commission inspectors at the SÚJB and at Temelín Nuclear Power Plant. The report on conclusions on this inspection was not available in the year 2005.

Data from the Information System of the Radiation Monitoring Network was transferred to the "EURDEP" system of the European Union on a continuous basis and on the basis of bilateral agreement to Austria. In June 2005 data from the radiation monitoring within the Czech Republic for 2004 was transferred to the "REM" database of the European Union.

As required by the relevant workplace of the European Commission, two high capacity files containing radiation monitoring data were processed in the form of questionnaires. The underlying data on significant workplaces with ionizing radiation sources within the Czech Republic and monitoring of their vicinity and effluents therefrom was presented in the first quarter of 2005. The high capacity file containing information on monitoring systems

implemented within the Czech Republic was processed and presented in the third quarter for the purposes of "AIRDOS" project.

7.1. Radiation Monitoring Network Control, Operation and Recovery

In compliance with Section 3 letter l) of Act No. 18/1997 Coll., the SÚJB, among other things, controls the activity of the countrywide radiation monitoring network. In accordance with Decree No. 319/2002 Coll., the SÚJB arranged comparison measurements (four different measurements) of the laboratory groups and measuring points of contamination of air, water and foodstuff in the year 2005. The LRKO of Dukovany NPP, LRKO of Temelín NPP and the National Radiation Protection Institute in Prague participated in the first comparison - "Aerosols – determination of ^{239}Pu activity in the aerosol filter". The laboratories LRKO of Dukovany NPP, LRKO of Temelín NPP, RC in České Budějovice, RC in Plzeň, RC in Ústí nad Labem, the National Radiation Protection Institute in Hradec Králové, the National Radiation Protection Institute in Ostrava and the National Radiation Protection Institute in Prague participated in the second comparison measurement "Aerosols – determination of radionuclide content in aerosol filter measurable by means of gamma spectrometry". In the third comparison, the laboratories LRKO of Dukovany NPP, LRKO of Temelín NPP, RC in České Budějovice, RC in Plzeň, RC in Ústí nad Labem, the National Radiation Protection Institute in Hradec Králové, the National Radiation Protection Institute in Ostrava, the National Radiation Protection Institute in Prague, the State Veterinary Administration in Olomouc, the State Veterinary Administration in Prague and the T. G. Masaryk Water Research Institute in Prague had to determine the radionuclide content in voluminous sample using gamma spectrometry. The objective of the fourth comparison measurement assigned to the laboratories LRKO of Dukovany NPP, LRKO of Temelín NPP and the National Radiation Protection Institute in Prague, was to determine the ^{90}Sr activity in aerosol filter. Criteria used by IAEA were chosen for the assessment of comparison measurements; detailed assessment of all comparisons will be carried out and discussed with the participants of these measurements at the end of the first quarter of the year 2006. However, it may already be stated that all laboratories concerned passed all four comparison measurements and complied with criteria in question.

The State Office for Nuclear Safety, pursuant to the Government Resolution No. 478/2001 Coll., adopting document "Assurance and Recovery of the Countrywide Radiation Monitoring Network", continued in works on this recovery in 2005. The innovation of the equipment of measuring points of air contamination, mobile and laboratory groups was particularly implemented.

7.2. Summary of Radiation Monitoring Results

Part II of the presented Annual Report includes the Report on Radiation Situation within the Czech Republic for 2005. It may be briefly summarized that there was no escape of radionuclides to the environment registered in 2005 within the territory of the Czech Republic, and that no excess of determined intervention levels was recorded at any of the measuring points that could result in the necessity of any population or environmental protection measures. The variations in dose rate measuring are caused by fluctuations of natural background. As in the previous period, there were no significant deviations in artificial radionuclide content in the air registered during the year 2005. Activity concentrations of ^{137}Cs in aerosol, defined by input from higher levels of the atmosphere and resuspension of the original fallout on the ground surface, amount for several years to ones of

$\mu\text{Bq}/\text{m}^3$ at maximum. A part of the ^{137}Cs activity in the air comes from the global fallout from nuclear weapon tests in the atmosphere and another part from the Chernobyl NPP accident. Besides the ^{137}Cs , ^7Be , which is of cosmogenic origin, and ^{210}Pb , which is the product of ^{222}Rn transformation, occur in aerosols.

There is still measurable, very low activity of ^{137}Cs contained in the environmental components, food chains and in people that got into the environment after the Chernobyl accident. Its specific activity has remained almost the same, i.e. same as in longer interval from nuclear weapon tests in the atmosphere. There were no differences detected between the content of radionuclides in the individual environmental components from the vicinity of Dukovany and Temelín nuclear power plants compared to other parts of the country.

8. NON-PROLIFERATION OF NUCLEAR, BIOLOGICAL AND CHEMICAL WEAPONS

The control of the adherence to the non-proliferation of nuclear, chemical, bacteriological and toxin weapons remained one of the essential activities of the SÚJB also in 2005. The objective of this effort is hot, particularly at this time - to contribute to the reduction of the risk of the abuse of sensitive materials and substances and prevention to contingent terrorist attacks.

The SÚJB carries out the function of state-governed surveillance of the observance of some measures related to the ban on the presented categories of weapons of mass destruction in accordance with:

- Act No. 18/1997 Coll., on the peaceful utilization of nuclear energy and ionizing radiation;
- Act No. 19/1997 Coll., on some measures related to the ban on chemical weapons;
- Act No. 281/2002 Coll., on some measures related to the ban on bacteriological (biological) and toxin weapons.

The framework for the performance of the state-governed surveillance in this field covers the fulfilment of the obligations resulting from the international conventions the Czech Republic acceded to (the Treaty on the Non-proliferation of Nuclear Weapons - NPT, the Treaties on EURATOM, the Comprehensive Nuclear-Test-Ban Treaty - CTBT, the Chemical Weapons Convention - CWC, the Bacteriological (Biological) and Toxin Weapons Convention - BTWC). The following is particularly involved:

- Transposition of the requirements resulting from the membership in these conventions to the Czech legal system and systematic check of their fulfilment;
- Cooperation when performing international inspections;
- Active participation in the work of organizations entrusted with the coordination of the international effort to control the ban on individual categories of weapons of mass destruction (e.g. IAEA, European Commission, and the Organization for the Prohibition of Chemical Weapons - OPCW).

The SÚJB experts also participate in the activity of international control regimes (Nuclear Suppliers Group, Zangger Committee, Australian Group). Activity of such groups does not have any internationally legal basis, however, they play an important supporting role in securing rigorous fulfilment of measures related to the non-proliferation of weapons of mass destruction. Members of such control regimes include an overwhelming majority of technology-advanced countries – potential technology suppliers.

All SÚJB activities in the field of the ban on or non-proliferation of weapons of mass destruction are coordinated with other departments (Ministry of Interior, Ministry of Industry and Trade, Ministry of Agriculture, Ministry of Health and Ministry of Foreign Affairs) and respect the principles of the European Union Strategy Against the Proliferation of Nuclear, Biological and Chemical Weapons, which the Czech Republic accepted.

8.1. Non-proliferation of Nuclear Weapons

8.1.1. Number of Inspections and Findings

The SÚJB seeks to make the control activities in the field of non-proliferation of nuclear weapons more effective on a long-term basis so that the risk of contingent abuse of nuclear items for non-peaceful purposes is further reduced with approximately same allocation of human and financial resources. The Office responds thus, within the sphere of its authority, to the UN Security Council Resolution No. 1540/2004, which in the nuclear area imposes liabilities upon the United Nations member states to accept transparent measures to strengthen the control of non-proliferation of nuclear weapons. The objective of such measures is to stop the illicit trafficking of nuclear materials and other nuclear items suitable for development and production of nuclear weapons and therefore to effectively prevent the risk of the occurrence of nuclear terrorism.

The SÚJB inspection activity in the field of the performance of state-governed surveillance of nuclear items, as in the previous period, focused on the verification of recording and method of management of nuclear materials located in the nuclear facilities, on inspection at selected holders of the permit to manage nuclear materials (outside the nuclear facilities) and on inspections carried out according to the Additional Protocol to the so-called Safeguards Agreement. The Additional Protocol empowers the inspectors to inspect not only the nuclear materials, but also the locations where the nuclear materials were managed in past and the locations where the activities related to nuclear power utilization or to National Nuclear Program are carried out, e.g. manufacture of components for nuclear facilities. An important aspect of the inspections carried out according to the Additional Protocol is the possibility to shorten the duty to notify of the intention to carry out the inspection to 24 hours or 2 hours before its initiation and to take analysis samples in the course of the inspection both from the location concerned and from the environment around the inspected location. The laboratory analysis of samples taken allows exposing the undeclared activities carried out a long time ago (such as the secret nuclear program of Iran).

In 2005, there were 147 inspections carried out in total in the field of the control of non-proliferation of nuclear weapons. The number included 62 inspections carried out by SÚJB and focused on inspection of nuclear materials and 7 inspections on inspection of exports/imports of nuclear items performed on the basis of SÚJB permission. The SÚJB inspectors together with IAEA inspectors, carried out 59 inspections focused on verification of data of the State System of Accounting for and Control of nuclear materials submitted by SÚJB to IAEA on a monthly basis, and 5 inspections focused on verification of data transferred by SÚJB to IAEA in the Initial Declaration to the Additional Protocol to the "Safeguards" Agreement. After the accession of the Czech Republic to the European Union, the inspection activities of SÚJB were extended by inspections carried out together with the European Commission inspectors. In the year 2005, a total of 14 joint inspections with the European Commission were carried out with the particular aim of verification of the physical

inventory lists of nuclear materials and verification of the "Basic Technical Characteristics" for individual nuclear facilities.

From the inspections carried out together with the IAEA two inspections may be pointed out as performed according to the Additional Protocol to the "Safeguards" Agreement. The IAEA used here the 24-hour advanced notification regime to notify on access to place in the location concerned. The first case involved access to buildings of the former Uranium Industry Chemical Treatment Plant – MAPE in Mydlovary, which is administered by the state-owned enterprise DIAMO, s.p. these days. All nuclear activities in this place were completed more than ten years ago. The target of the IAEA inspection was to verify that there are no undeclared nuclear materials and that no undeclared activities, which relate to non-peaceful utilization of nuclear materials, are performed in this place. In the second case, the IAEA inspectors exercised the right of access to buildings situated within the Radioactive Waste Repository "Richard" administered by the Radioactive Waste Repository Authority. The IAEA inspectors took environmental samples in the area of former irradiation room and in the semi-hot cell that is situated in this location. Within the inspections the IAEA inspectors verified information related to the history of nuclear fuel cycle in the Czech Republic. During these inspections the inspectors took analytical samples from the environment. The target was to verify if any undeclared activities, which would be abhorrent to the international commitments of the Czech Republic or former Czechoslovak Socialist Republic, were performed at the targeted nuclear facilities.

At the end of 2005, special attention was paid both on the part of SÚJB and also on the part of IAEA and the European Commission to a control of the shipment of nuclear fuel with highly enriched uranium from the VR-1 training reactor located on the premises of the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague and to follow-up import of fresh nuclear fuel with low-enriched uranium from the Russian Federation. This refuelling represents for the training reactor a certain contribution of the Czech Republic to the fulfilment of the objectives of the Global Threat Reduction Initiative declared by the United States Government supported by the IAEA. The purpose of the initiative is to contribute to the reduction of the risk of possible abuse of the highly enriched uranium for terrorist purposes.

Results of the SÚJB inspections carried out in 2005 show that the holders of the licence for nuclear materials management keep records of nuclear materials and manage nuclear materials or perform exports/imports of nuclear items in compliance with valid regulations. Therefore, no remedial measure has been imposed in the monitored period.

Also joint inspections carried out with the IAEA inspectors and the European Commission inspectors proved correctness of data included in the State System of Accounting for and Control of nuclear materials and fulfilment of the international commitments of the Czech Republic resulting from the "Safeguards" Agreement with IAEA and from the Additional Protocol to this agreement, including commitments resulting from the membership of the Czech Republic in the European Union.

Based on results of inspections carried out, the SÚJB as well as the IAEA stated that in the Czech Republic, in the monitored period, there was no escape of nuclear materials and Trigger list items in the nuclear area for undeclared purposes or for the abuse for non-peaceful purposes. The Czech Republic fully meets its international commitments resulting from the Non-proliferation Treaty.

Granting of licences for nuclear material management, licences for exports and imports of nuclear materials, Trigger list items and nuclear related dual use items and development of

inventory reports and declarations sent to IAEA and the European Commission on a regular basis are an integral part of the SÚJB inspection activity in the area of the non-proliferation of nuclear weapons.

Within the performance of state-governed surveillance of nuclear items, the SÚJB issued a total of 41 licences to manage nuclear materials and 9 decisions on cancelling the licence to manage nuclear materials in the year 2005. According to data kept in the State System of Accounting for and Control of nuclear materials (SSAC), a total of 194 holders of the licence for nuclear materials management were registered, included for the recording purposes in 15 material balance areas (MBA) in the Czech Republic as of December 31, 2005. From this number, for 180 holders of licence for nuclear materials management outside the nuclear facilities, the SÚJB is fully responsible for keeping the records of nuclear materials through the Division of Nuclear Non-Proliferation. Total amount of nuclear materials increased at all licensees by 10 % in the year 2005 and achieved the value of 1,453.69 SQ, where 1 SQ (Significant Quantity), the safeguard-significant quantity, is the amount of nuclear material that is significant in terms of possible abuse for production of a nuclear explosive device or a nuclear weapon.

Within the control of exports and imports of nuclear items the SÚJB issued in total 63 licences in 2005. From this number 8/13 permits were issued for import/export of nuclear materials, one permit for the export and return import of nuclear materials, 5/7 licences for import/export of Trigger list items and 12/16 licences for import/export of dual use items in the nuclear area. In one case the export of nuclear related dual use items to the Democratic People's Republic of Korea was not permitted.

In 2005 the SÚJB activities, when meeting the commitments resulting from the Additional Protocol, focused particularly on the preparation of regular quarterly declarations related to exports and imports of Trigger list items, on the regular annual update of the Initial Declaration provided to the IAEA according to the Additional Protocol in 2002 and on the processing of additional information required by the IAEA.

The accession of the Czech Republic to the European Union brought the requirement for sending regular safeguards information to the European Commission. Requirements for the content of inventory reports are stipulated by Commission Regulation (EURATOM) No. 302/2005 that entered into force in March 2005. However, the software (ACCESS program) developed by the European Commission for this data transfer has not been successfully tested yet. Therefore, the European Commission receives these monthly inventory reports from SÚJB on behalf of individual nuclear facilities. In practice this means that the SÚJB sends regular monthly reports to the IAEA as well as to the European Commission, in modified format. Unreadiness of new software causes thus extensive volume of extra work, which has not been taken into account in organizational preparation before the accession to the European Union.

8.1.2. International Cooperation

The activity of SÚJB in the area of the non-proliferation of nuclear weapons includes a number of international relations. Of course, this involves the obligation to assure fulfilment of commitments resulting from the international conventions that are binding for the Czech Republic in this area. However, the assistance of the Czech Republic to various international initiatives or programs is also important both on expert and on financial level. Within the sphere of its authority, the SÚJB contributes to this effort of the Czech Republic by a number of activities.

The entering of the Czech Republic to the IAEA Member States Support Program is highly assessed on the part of the international community. Under this program seventeen technology-advanced countries contribute towards the improvement of operability and efficiency of the IAEA safeguards activities above the scope of regular budget. The SÚJB coordinates the involvement of the Czech Republic to this program and is also the greatest contributor.

As a regular contribution of the Czech Republic to the "IAEA Member States Support Programs" the SÚJB organized the eighth training course of IAEA safeguards inspectors at Dukovany NPP, and in cooperation with the state-owned enterprise DIAMO, s.p., three technical visits of IAEA inspectors in the uranium mines. The target was to provide the IAEA inspectors practical experience for performing inspection activities to be carried out pursuant the Additional Protocol at similar facilities and locations. Within the "IAEA Member States Support Programs" the SÚJB organized the seminar of IAEA technical personnel at Temelín NPP, who process data sent according to the "Safeguards" Agreements by member states to the IAEA. Regular placement of the training of IAEA inspectors in the Czech Republic shows very good level of fulfilment of the "safeguards" measures within the Czech Republic in performing the state-governed surveillance as well as at licensees.

Within the "IAEA Member States Support Program" the Office further facilitated participation of the Central Analytical Laboratory of the Nuclear Research Institute Řež, a.s. in the process of assessment and control of quality of services provided for IAEA by the network of world analytical laboratories and participation of Dukovany NPP in the program of testing new surveillance systems developed by IAEA for control of nuclear materials in the interim spent fuel storage facilities. The SÚJB experts actively participated in the project of development of the new IAEA safeguards system for final disposals of spent fuel.

The financial contribution in the amount of CZK 500,000 provided with the aim to support, within the framework of the IAEA Member States Support Program, the initiation of the project for reconstruction of the safeguards information system with its conception from the 1970s, was small in financial terms but important from the international-political point of view. The Managing Director, M. Baradei, thanked, on behalf of IAEA, to the Czech Republic, U.S.A. and Great Britain, for this supportive step at the regular session of the Board of Governors held in June and invited other countries to follow it. Successful reconstruction of the information system by means of advanced technologies shall significantly help to improve the efficiency of the IAEA safeguards activities.

The SÚJB experts, in the monitored period, actively supported the Czech participation in the international control regimes, i.e. Nuclear Suppliers Group and Zangger Committee.

8.2. Verification of the Prohibition of Chemical Weapons

8.2.1. Inspections and Findings

There are 11 organizations in the Czech Republic that manage the Schedule of chemicals 1 according to the Chemical Weapons Convention (high-level toxic chemicals pursuant to Act No. 19/1997 Coll.), 11 organizations managing the Schedule of chemical 2 according to the Chemical Weapons Convention (dangerous toxic chemicals pursuant to Act No. 19/1997 Coll.) and 26 organizations managing the Schedule of chemical 3 according to the Chemical Weapons Convention (less dangerous toxic chemicals pursuant to Act No. 19/1997 Coll.). A

total of 34 facilities produce Discreet Organic Chemicals of which 7 facilities produce containing Phosphor, Sulphur or Fluorine (the so-called PSFchemicals). All organizations managing Schedule of chemicals 1 were granted the relevant license issued by SÚJB.

The purpose of the inspection activities in the field of the control of the prohibition of chemical weapons is to stop the illicit management of controlled toxic chemicals and therefore to effectively prevent the risk of the occurrence of chemical terrorism. In 2005 the SÚJB inspectors carried out a total of 41 inspections, which included 35 scheduled and 6 unplanned inspections. The main effort of the inspection activities were primarily focused on inspection of organizations managing Schedule of chemicals 1, where a total of 12 organizations were inspected, 4 organizations managing Schedule of chemical 2, two organizations managing Schedule of chemical 3 and 21 facilities producing Discreet Organic Chemicals. During the inspection of chemical enterprises the main attention was given to enterprises, which are declared duly and annually to the Organization for the Prohibition of Chemical Weapons (OPCW) and which can be subject to international inspections of this Organization. Their preparedness for acceptance of the international inspections was also verified. In 2005 no international inspection of inspectors of the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons was carried out in the territory of the Czech Republic. Out of 6 unplanned inspections there were 2 inspections carried out as a result of findings, one case involving Schedule of chemicals 1 and the second case involved the discovery of artillery shells with liquid filling and the suspicion of high-level toxic chemicals therein.

During inspections, no serious breach of Act No. 19/1997 Coll. or implementing Decree No. 50/1997 Coll., was found, and therefore it was not necessary to propose any penalties. Only deficiencies in fulfilment of notification duty were found on the part of the organizations producing rapeseed oil methyl ester. In view of the fact that it did not involve intentional tort, but only non-listed of produced toxic chemicals among monitored Discreet Organic Chemicals pursuant to the above mentioned act, only a remedial measure was imposed on the organizations – to fulfil the notification duty for the year 2003 and 2004 within 2 months from the termination of the inspection.

In addition to inspections, other possible concerned organizations were searched in the field of management of Schedule of chemicals 2 and Schedule of chemicals 3 of the Chemical Weapons Convention (the rubber and plastic industry, textile industry, graphical-arts industry, paper industry, cosmetics and household chemistry) and when producing Discreet Organic Chemicals, especially of the PSF type. While there were no other concerned organizations found in the case of toxic chemicals of the Schedule of chemicals 2 and Schedule of chemicals 3, there are some facilities for production of Discreet Organic Chemicals—in the under verification completion. This involves former grease industry sector (the production of detergents, soaps, ecological oil).

Every year, in accordance with the requirements of the Chemical Weapons Convention, the SÚJB processes, for the need of Organization for the Prohibition of Chemical Weapons in the field of management of specified chemical substances, declarations of national data, declarations of concerned facilities and plants, and declarations of facilities and plants producing Discreet Organic Chemicals. In 2005 declarations of past activities for 2004 and declarations of planned activities for 2006 were processed. Also the National Programs of the Czech Republic related to protective purposes against chemical weapons were notified.

Data related to the declaration of past activities for 2004 was reported by 51 organizations to the SÚJB. Data provided by 38 organizations, which exceeded quantity and concentration

limits established by the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons, was included into the declaration of national data for the Czech Republic. The declaration of past activities for 2004 further included data for 2 facilities producing 3 Schedule of chemicals 3 in 3 plants and declaration of 15 facilities producing Discreet Organic Chemicals in 51 plants. Information on imports and exports of the defined toxic chemicals carried out until May 1, 2004 on the basis of 14 licenses granted for imports/exports was further incorporated in the national data.

Data on the production of toxic chemicals of the Schedule of chemicals 3 in 2 facilities (3 plants) was included in the declaration of the planned activities for 2006. In the course of 2005, the specification of some data from previous declarations concurrently continued between the Organization for the Prohibition of Chemical Weapons, the Czech Republic and other States Parties of the Organization for the Prohibition of Chemical Weapons. There were no substantial differences found in the declarations of the Czech Republic.

Besides the performance of its own inspection activities, the SÚJB in the last year exercised a great effort towards security of commitments, which result for the Czech Republic from the Chemical Weapons Convention, where the SÚJB performs the function of the National CWC Implementation Administration in the Czech Republic.

8.2.2. International Cooperation

Particularly in connection to the membership of the Czech Republic in the Executive Council of the Organization for the Prohibition of Chemical Weapons in the years 2003 - 2005, the international cooperation in the field of Chemical Weapons Convention implementation was given an importance in the past period.

The regular 10th meeting of the OPCW Conference of the States Parties was held on November 7 - December 11, 2005. The SÚJB contributed to the active appearance of the Czech delegation on the Conference. The head of the delegation in his-speech mentioned some specific actions, which took place with the support of the SÚJB in the year 2005 on the territory of the Czech Republic, informed about the financial contribution of the Czech Republic for the disposal of chemical weapons of the Russian Federation and about the contribution to the Voluntary Assistance Fund according to Article X of the Chemical Weapons Convention (Assistance and Protection against Chemical Weapons).

In 2005, SÚJB personnel participated in the meeting of the OPCW Technical Secretariat Working Group on problems related to inspections in the chemical industry, the meeting of the States Parties to the East European Regional Group in Alma-Ata focused on the implementation of Article VII of the Chemical Weapons Convention (National Implementing Measure) and industrial declaration processing method, the Plenary Meeting of the Australian Group in Sydney, the exercise in the field of Proliferation Security Initiative (Ostrava) and the exercise for providing an assistance "Joint Assistance 2005" in Ukraine.

The SÚJB together with the OPCW Technical Secretariat organized the course "Chemical Weapons Civil Defence Training Course", which was held in the Institute for Population Protection in Lázně Bohdaneč. The course was intended for specialists of the States Parties to the Chemical Weapons Convention and provided basic information on protection against chemical weapons, detection and decontamination of chemical warfare agents. A total of 15 specialists from 14 States Parties to the Chemical Weapons Convention participated in the course. National costs, of course, were borne by the Czech side and the trainers were

specialists from the Czech Republic and Organization for the Prohibition of Chemical Weapons.

In cooperation with SÚJB, the Military Technical Institute of Protection in Brno organized the training of the inspectors of the OPCW Technical Secretariat with real chemical warfare agents. A total of 25 inspectors participated in this training and the tasks regarding detection, identification and decontamination of chemical warfare agents were trained.

The effect of the long-term effort is a strong representation of the experts from the Czech Republic in the Bodies and Commissions of the Organization for the Prohibition of Chemical Weapons - in the Commission of Confidentiality, in the Network of Legal experts, in the Consultative body for administrative issues, and in the team of experts of OPCW "Protection Network". The Czech Republic representative has been currently holding the Office of the Chairman of the Scientific Advisory Board of the OPCW Technical Secretariat Chairman. Another two specialists from the Czech Republic have been operating in the committee for the assessment of spectrums of chemical substances relevant to the Chemical Weapons Convention.

The Military Technical Institute of Protection in Brno contributes to the "OPCW Central Analytical Database" on a regular basis by submitting results of the measurements of spectrums of toxic chemicals relevant to the Chemical Weapons Convention. The Organic Synthesis Research Institute, a.s., in Pardubice – Rybitví participates in the Integral European Accreditation System performed by chemical analytical laboratories.

8.3. Verification of the Prohibition of Biological and Toxin Weapons

8.3.1. Inspections and Results

The SÚJB inspection activity in the field of the control of the prohibition of biological weapons for the monitored period was carried out in compliance with Act No. 281/2002 Coll. and follow-up legal regulations. The activity focused on the observance of legal obligations of the holders of the permit to manage highly hazardous biological agents and toxins as well as at the entities subjected to the notification duty on management of hazardous biological agents and toxins. There are 68 holders of the permit to manage highly hazardous biological agents and toxins registered in the Czech Republic and 17 entities subjected to the notification duty on management of hazardous biological agents and toxins. The most significant entities include the producers of human and veterinary pharmaceuticals and some research institutions, in terms of pathogen variability. The holders of the permit for management of highly hazardous biological agents and toxins include also the National Reference Laboratory for Newcastle's Disease and Avian Influenza at the State Veterinary Administration in Prague and the Institute of Contagious Disease and Epizootology of the Veterinary and Pharmaceutical University in Brno. Both workplaces are prepared to diagnose the Avian influenza virus H5, which is in the list of highly hazardous agents and toxins.

During the inspections, the SÚJB performed a control of accounting books, correctness and truth of data filled in the declarations, purpose, scope and method of management of highly hazardous biological agents and toxins and hazardous biological agents and toxins at the individual entities. In relation to the requirements of the UN Security Council Resolution No. 1540/2004 and Act No. 186/2004 Coll., the inspection activities were extended in the monitored period to include the field of the legality of acquisition, including import and export, the methods of storage and security of highly hazardous and hazardous biological

agents and toxins before their abuse. On the basis of the results and knowledge acquired from the inspections performed the SÚJB developed background papers for completion of the voluntary declaration of the Czech Republic for 2005 to be presented to the UN Security Council in compliance with the provision of the Biological and Toxin Weapons Convention - BTWC.

A total of 40 inspections were carried out in 2005, which included 38 scheduled and 2 unplanned inspections. During the inspections carried out, there was no serious breach of Act No. 281/2002 Coll. and its implementing Decree No. 474/2002 Coll., found at the inspected entities. Detected minor deficiencies related to keeping of records and data included in the declarations. In most cases, such deficiencies were corrected on site in the presence of inspectors or within regular term defined in the respective protocol, and therefore no penalties were imposed. The inspected entities entered no objections against the protocols.

In the field of the performance of state-governed surveillance and recording of following the prohibition of biological weapons, the SÚJB focused in the course of 2005 on monitoring, search and verification of new information acquired from open sources. The effect of this effort was the inclusion of 8 new entities into the National Registry of entities managing the hazardous biological agents and toxins and the issue of 19 new decisions on the management of highly hazardous biological agents and toxins.

In connection with the accession of the Czech Republic to the European Union and concurrently with the fulfilment of another requirement of the UN Security Council Resolution No. 1540/2004, which imposes liabilities upon the United Nations member states to develop the methods of cooperation, public awareness and extension of publication activities, a number of seminars took place. In January 2005 there was a training held with the aim to make the participants acquainted with new amendments to act on some measures related to the prohibition of bacteriological (biological) weapons, in particular in relation to the amendments to Customs Act, Government Regulation No. 631/2004, amending Government Regulation No. 246/1998, establishing the lists of classified matters, and changes in the field of licensing. A total of 29 representatives of various organizations participated in the seminar. Other lectures were carried out in cooperation with the Police of the Czech Republic, the Masaryk University in Brno and the Water Development Company in Prague.

8.3.2. International Cooperation

In accordance with the worldwide trend, the deepening of SÚJB international cooperation continued in the year 2005 in the field of the non-proliferation of biological weapons. The SÚJB representatives took part in the expert meeting and in the third annual session of the BTWC contracting states held in Geneva. They also participated in the activity of the working group in developing common action of the member states of the European Union at the sixth Evaluation Conference and the regional session of the experts of the Proliferation Security Initiative (PSI) held in Hamburg.

Experiences from national inspection activity of the SÚJB in the mentioned area were presented to the foreign visitors at the SÚJB as well as at the conference of Chemical & Biological Terrorism Defence held at the beginning of February 2005 in Buellton. In relation to this action and in presence of other national organizations (National Institute of Public Health, General Directorate of Fire Rescue Service of the Czech Republic, Ministry of Health, Ministry of Defence) the SÚJB organized in cooperation with the National Institute for Nuclear, Chemical and Biological Protection the seminar, with international participation, on the subject of current threat of biological terrorism, at which prominent domestic and foreign experts made their presentations.

Four organization from the Czech Republic taking part in the national biological defence research and three organizations producing vaccines for human or veterinary medicine were included in the National Summary Declaration on Confidence Building of the BTWC Contracting States for 2004. The content of this declaration, which is filed in the United Nations Secretariat in New York, evoked an interest of, particularly, Germany and Hungary, in establishing bilateral contacts on expert level.

9. INTERNATIONAL COOPERATION

In the field of international cooperation, the SÚJB focused its activity in the year 2005 on the fulfilment of the commitments resulting for the Czech Republic from the international conventions, on the maintenance and development of relations with the partner organizations and, last but not least, on the coordination of the international technical cooperation both on bilateral and on multilateral level. The Office, within the sphere of its authority, also supported the Czech participation in the activities within the European Union.

9.1. Bilateral Cooperation

One of the long-term priorities of the State Office for Nuclear Safety is the cooperation with the neighbouring countries, i.e. Germany, Austria, Slovakia and Poland. Other bilateral cooperation of the Office is oriented on the EU countries and the states with a significant program of peaceful utilization of nuclear energy and ionizing radiation such as U.S.A., Ukraine and Russian Federation.

Federal Republic of Germany

An annual meeting of the representatives of the Czech Republic and the Federal Republic of Germany responsible for the fulfilment of the bilateral agreement was held in Prague in November 2005. The agenda of the meeting related to a traditional theme on the subject of surveillance and legislative framework, including information on the results of analyses of the selected events that occurred at nuclear power plants in the past period. Current information provided by the German side related to results of the studies focused on measures against possible terrorist actions. The issue of early exchange of information, particularly in the case of minor events occurring at nuclear power plants, which could alarm the public, was also discussed.

The cooperation with Germany proceeds also on an informal basis, and is based on ad-hoc consultations with experts. In relation to the expert seminar, which was held at the end of the year 2004 in Prague, and with the use of data submitted by the Czech side, the German side executed in the last year calculations of possible consequences of potentially simulated serious accident at Temelín NPP for the German territory. Summary of results obtained by the Czech side at the end of the last year shows that even this hypothetical accident would not require any emergency measures to be taken to protect population on the German territory. In general, the German experts agree in the majority of the parameters with the conclusions of similar calculations performed by the Czech and Austrian experts in past years as one of the measures agreed by the Prime Ministers in Brussels at the end of 2001 (the so-called "Brussels Protocol").

The last expert seminar for the time being, which focused on, in general, the monitoring and assessment of operational safety and, specifically, the safety indicators and the assessment of operational experience, was organized by the German side at Philipsburg Nuclear Power Plant in October 2005.

Austria

The international cooperation with Austria focused in the last year particularly on two areas. The first priority was given to maintenance of the expert communication on the minimum level achieved in the course of the implementation of agreements from Melk and Brussels. The second priority was to finish the meeting on modifications to the Intergovernmental Agreement on Exchange of Information in the Nuclear Area.

In the course of the year 2005, the SÚJB made a great effort to operate the information line covered by so-called Brussels Protocol concluded by the Prime Ministers of both countries in December 2001. Amended text of the Intergovernmental Agreement was agreed upon on the expert level in the year 2004, and agreement on issues of procedure and possible accompanying arrangements are to be concluded at the beginning of the year 2006. Problem free transmission of information as well as modification to the Intergovernmental Agreement should contribute to further improvement of confidence in this area, which is sensitive for relations of both countries.

An annual meeting of the representatives of the Czech Republic and Austria, taking part in the fulfilment of the existing bilateral agreement, was held in Vienna at the end of November. Both sides presented recent news in the legislation or organization of state-governed surveillance. The Czech side informed on the current situation at Temelín and Dukovany Nuclear Power Plants. During discussion, the Austrian delegation showed closer interest in some technical issues, e.g. in connection with the long-term operation of Dukovany NPP or reconstruction of some parts of the turbine generators at both units of Temelín NPP. Both sides again well assessed the cooperation in the field of emergency preparedness. In relation to the annual meeting, the Austrian side arranged the visit at the Austrian Federal Crisis Centre in Vienna.

Slovakia

The cooperation between the State Office for Nuclear Safety and the Nuclear Regulatory Authority of the Slovak Republic is very wide on a long-term basis. An annual meeting was held in Bratislava in November 2005. The discussion included a wide range of problems, from technical issues related to the operation of units of nuclear power plants of the same provenience to issues related to the performance of surveillance activities, inspectors' education, or range of utilization of the probabilistic approach in safety assessment. Within the meeting the Slovak partner organized a technical visit of V1 Nuclear Power Plant in Bohunice, where the shutdown of the first of two reactors will commence in 2007 after thirty years of operation.

Poland

The intergovernmental "Agreement on Early Notification of Nuclear Accident and Exchange of Information on Peaceful Utilization of Nuclear Energy, Nuclear Safety and Radiation Protection", which was prepared on a long-term basis, was concluded with the Polish Republic in the last year. By virtue of both governments, the Agreement was signed by the Chairpersons of national regulatory authorities in the course of the General Conference of the

IAEA Member States held in Vienna. The Agreement imposes an obligation on both sides to inform about possible nuclear accident and gives contract basis to mutual expert consultations in the field of nuclear safety, radiation protection, radioactive waste management and nuclear power in general.

The United States of America

A significant event of the last year was the visit of the Chairman of the Nuclear Regulatory Commission of the United States of America, Mr. Nils Diaz, to Prague. The Chairman, Mr. Diaz, presented in the meeting at the State Office for Nuclear Safety in detail his already declared initiative leading towards the creation of the international safety assessment system of new projects of nuclear power plants. The proposal considers progressive convergence of the projects of nuclear reactors and their components manufactured in the worldwide scale by several manufacturers only. Progressive convergence of standards used for the safety assessment is extrapolated. Proposed extension of the cooperation in safety assessment will lead to widely respected opinions on the nuclear safety level of the individual projects of nuclear power plants to be issued by the international group on the basis of the assessment carried out. The initiative maintains sovereignty and responsibility of the national regulatory authorities; however, it can lead to saving of the means expended on individual safety assessment.

During the visit, the renewed working arrangement defining in detail the rules for expert cooperation of both regulatory authorities was signed.

A part of the program of the Chairman, Mr. Diaz, during his visit in the Czech Republic was also the technical visit to the Nuclear Research Institute in Řež near Prague. The following expert discussion included assessment of the possibilities of cooperation in providing technical assistance to third countries, in particular in the field of assurance of the primary circuit pressure components integrity at power plants with the WWER type reactors.

Ukraine

The cooperation with Ukraine is built on the similarity of the technology used at nuclear power plants, when both countries operate units with the reactors of similar construction (WWER 1000 project). Previous cooperation was evaluated during visit of the Ukrainian regulatory authority Chairperson, Mrs. Mykolajchuk, to Prague in December. Issues related to the legislation and the performance of surveillance activities were assessed at the meeting. Within the Development Aid Program provided by the Government of the Czech Republic, the selected IAEA projects focused on the improvement of Ukrainian reactor safety are financed on a long-term basis. The SÚJB experts operate in coordinating these IAEA projects and the activity is contracted in a large extent to Czech organizations, particularly the Nuclear Research Institute in Řež. The bilateral meeting addressed the assessment of the future cooperation. The Ukrainian side informed in detail on the intensification of the liquidation program of Chernobyl NPP. A part of the visit of the Ukrainian delegation was also the technical visit to Temelín NPP.

Central Europe

A traditional Central European meeting of regulators of four countries (the Czech Republic, Slovak Republic, Hungary and Slovenia) was held in Slovakia in the beginning of June. The

agenda of the meeting included regular items such as information on modifications to legislation and changes in the regulatory organizational structure. Furthermore, some important events, which occurred at nuclear power plants, the use of operation safety indicators and the current situation in the field of nuclear waste management, were discussed. The last item was discussed in particular in relation to the Slovenian proposal for a regional nuclear waste repository. Questions related to the membership in the European Union, and to the preparation of national presentation for upcoming Review Meeting of the Convention on Nuclear Safety were addressed during the informal discussion. Last but not least, the possibilities of common progress within the voluntary associations and working groups such as the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors, NERS, CONCERT and others were assessed.

9.2. Multilateral Cooperation

As in the previous years, the activity of the SÚJB within the international relations focused in the year 2005 on the international organizations, particularly on the IAEA. Other significant partners are the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) Preparatory Committee and the Nuclear Energy Agency within the Organization for Economic Cooperation and Development (NEA/OECD). There are a number of international conventions in the nuclear area that were primarily concluded to support the international cooperation and transparency necessary in this sector. The fulfilment of the commitments resulting for the Czech Republic from particular international conventions is thus another important activity within the multilateral cooperation. The participation of SÚJB experts in the work of many expert associations such as the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors and the Western European Nuclear Regulators Association (WENRA) comes under the category of SÚJB multilateral relations.

9.2.1. International Atomic Energy Agency

The International Atomic Energy Agency (IAEA) is the most significant international organization operating in the field of utilization of nuclear energy and ionizing radiation. It is one of the most significant technical agencies within the UN organization system. The main objectives of the agency involve the non-proliferation of nuclear weapons, the assistance in development and utilization of nuclear technologies for peaceful purposes and the facilitation of technical cooperation between the member countries.

Technical cooperation in the field of the non-proliferation of nuclear weapons is described in detail in the relevant chapter.

The IAEA facilitates significantly the safe utilization of nuclear technologies by developing safety standards that are, in most countries, the base for national regulations. The SÚJB experts as well as other experts from the Czech Republic cooperate in their proposals. In addition, the SÚJB Chairperson is, in this period, the member of the Advisory Committee of the IAEA Director General, which discusses and recommends final proposals for standards to the Board of Governors for discussion.

Another service provided by the IAEA to member states is an independent inspection in the form of mission performed by the teams with representative international participation. The inspection team always works according to fixed methodology and with clearly determined

assessment criteria. In 2005, the IAEA experts assessed the way the Nuclear Research Institute in Řež near Prague fulfilled recommendations of the inspection team, which carried out the comprehensive assessment of the safety assurance of the LVR-15 research reactor three years ago. The experts stated in the final report that the recommendations are fulfilled altogether and recommended continuing in modifications to the research reactor controlled area regime and completing of safety assessment of the reactor loops.

In 2005, only one "national" project was opened within the IAEA Technical Cooperation Program, which was focused on education and improvement of the age structure of various institutions in the field of non-industrial utilization of nuclear energy in the Czech Republic (in particular hospitals, schools, research, state administration). A number of fellowships were carried out within the project, which involved primarily hospital and university personnel and which could not be carried out without this support. The already commenced project for the support of the completion of new linear accelerator at the Nuclear Physics Institute of the Academy of Science of the Czech Republic has been successfully finished. In both cases, especially in the case of linear accelerator, the involvement of the recipients in total project costs is important.

The Czech Republic has been recently extending its support, which provides in a variety of ways to the IAEA Technical Cooperation Program. This corresponds both to the advanced technologies in the nuclear area and to the changes in the international position of the Czech Republic.

One of the forms of the support from the Czech Republic side is organization of regional training courses on a regular basis particularly focused on radiation protection and physical protection of nuclear facilities and materials. In the last year, more than 50 experts mainly coming from the countries of the Former Soviet Union and other developing states participated in the training courses implemented in the Czech Republic under the IAEA auspices. Expert fellowships were awarded to other 11 applicants (month and more) and short scientific visits were awarded to 40 experts (1-2 weeks). The subjects related to nuclear medicine, radioactive waste management, radiation protection and emergency planning. On the other hand, more than 53 experts from the Czech Republic actively participated in conferences, seminars and gave lectures at training courses organized by the IAEA. Almost 70 experts were invited to the IAEA technical meetings for preparation of documentation, opinions or preparation of new IAEA standards.

In addition to the mentioned extensive projects of technical cooperation, the scientific workplaces in the Czech Republic take share in 32 small research projects in the field of nuclear power, ionizing radiation applications and radioactive waste management.

The Czech Republic shares in the IAEA budget by approximately one percentage (it results from the economic maturity index). This contribution is paid from the state budget - the Ministry of Foreign Affairs Chapter. The contribution to the Technical Cooperation Fund, from which the above-mentioned activities are financed, is covered by the budget of SÚJB. Furthermore, both institutions support the selected projects in the form of extrabudgetary contributions from the relevant chapter of the state budget. These contributions focused both in the fields considered by the Czech Republic as internationally important (e.g. terrorism-fighting) and in the improvement of nuclear safety and radiation protection in less developed states. The contributions are positively assessed not only by the member states that accept the support, but also by the other developed countries that provide this support on a long-term basis. In December, the coordination meeting for the assistance to Armenia (nuclear safety improvement of the Armenian NPP) was held at the IAEA Headquarters, in which the Czech

Republic participated as one of the donors together with the main contributors such as the United States of America or the European Union. Experiences show that relatively small financial means may have a significant international-political impact in the field of peaceful utilization of nuclear energy and, in particular, non-proliferation of weapons of mass destruction. Moreover, extrabudgetary contributions give support to the development of industry and services in the Czech Republic. In the last year, the Czech entities participated in more than 70 % of projects co-financed by extrabudgetary contributions and, in some cases; they were contracted for the projects, where the Czech contribution represented only a fraction of the total budget.

In the last year, the contributions of the Czech Republic within the cooperation with IAEA were divided as follows:

- Regular contribution to the IAEA Technical Cooperation Fund (CZK 3. 096 mil.) and new contribution amounting to 5 % of the costs of implementation of the national projects of the Czech Republic (CZK 0.48 mil.).
- Special contribution (CZK 2.82 mil. drawn from SÚJB's budget, approved by the Czech Republic Government Decision No. 459 dated April 20, 2005), used for financing of the pilot study for the safety assessment system of the so-called high-energy steam and feed water line at the Ukrainian Khmel'nitsky NPP; completion of the ultrasonic inspection of piping welds in the primary circuit of the Armenian Medzamor NPP and training of the experts from Tajikistan in the field of regulation in managing ionizing radiation sources in medicine, including their equipment with necessary protective tools.
- Special contribution to the IAEA and Czech Republic Technical Cooperation Program (CZK 0.49 mil. drawn from SÚJB's budget, approved by the Czech Republic Government Decision No. 459 dated April 20, 2005), used for financing of the purchase of dosimeters for monitoring of patient doses in radiotherapy at the University Hospital Královské Vinohrady.
- Special contribution to the support of new IAEA information safeguards system building (CZK 0.513 mil. drawn from SÚJB's budget, approved by the Czech Republic Government Decision No. 459 dated April 20, 2005).
- Supplementary contribution (CZK 3.5 mil. drawn from the Czech Republic Government Development Aid Program), which was distributed among projects focused on improvement of nuclear safety of Medzamor NPP in Armenia (prediction of piping erosion and corrosion), Khmel'nitsky NPP in Ukraine (integrity assessment of the so-called high-energy steam and feed water line) and radiation protection assurance with a stress put on medical exposures in the hospital in Bosnia and Herzegovina.

With a view to maintaining positive international-political response to the Czech support of the IAEA activities, the SÚJB reserved in its 2006 budget financial means in total amount of CZK 7.4 mil. In addition to regular contribution to the Technical Cooperation Fund (CZK 3,245,231 including 5 % of contribution for the National Participation Costs), the SÚJB proposes special contribution in the amount of CZK 4,150 thousand for the implementation of the following IAEA programs:

- IAEA Program of Action for Cancer Therapy (PACT). Special contribution in the amount of CZK 2.50 mil. has been designed as the first one from the three-year support cycle of one of the most significant IAEA activities. In compliance with the resolution of the General Conference of IAEA member countries, the program is aimed at supporting of cancer diagnostics and treatment in the least development

countries. The program will be also funded with a part of the financial premium related to the Nobel Peace Prize awarded to the IAEA in 2005 and the special contributions provided by a number of the other developed countries.

- IAEA Technical Cooperation Project CZR/0/005. Special contribution in the amount of CZK 0.375 mil. is proposed to cover the costs of participation in the implementation of the national program for the support of education and improvement of the age structure of various institutions in the field of non-industrial utilization of nuclear energy in the Czech Republic (in particular hospitals, schools, research and state administration).
- Support Program for IAEA Nuclear Safety Division activities. Contribution in the amount of CZK 0.775 mil. is proposed to support the selected IAEA projects in the fields of nuclear safety, radiation protection and IAEA crisis management.
- Support Program for the IAEA Safeguards Activity. Special contribution in the amount of CZK 0.5 mil. is proposed to support the first phase of new information system building for IAEA safeguards activities. Three-year support cycle is planned; commenced in the last year.

Supplementary contribution in the amount of CZK 2.9 mil. (drawn from the Czech Republic Government Development Cooperation Program), approved for 2006, will be used for implementation of continuing projects focused on the improvement of nuclear safety of nuclear power plants in Armenia and in Ukraine.

9.2.2. Other Organizations and Associations

Nuclear Energy Agency within the Organization for Economic Cooperation and Development (NEA/OECD)

The Nuclear Energy Agency within the Organization for Economic Cooperation and Development (NEA/OECD) is one of the international platforms, which facilitates the exchange of experiences and provides assistance in the field of peaceful utilization of nuclear energy and ionizing radiation, radiation protection and emergency preparedness. The SÚJB is engaged in a number of activities carried out by this institution. The SÚJB representatives are the members of the Committee on Nuclear Regulatory Activities (CNRA) and three working groups working within this Committee, and the Working Group on Operating Experience (WG/OE), the Working Group on Inspection Practices (WG/IP) and on "human factor" impact assessment.

The SÚJB also participates in the work of the Committee on Radiation Protection and Public Health (CRPPH) and its working groups – the Working Group on Nuclear Emergency Preparedness (WG/NEM), on International System on Occupational Exposure (ISOE), the Expert Group on Radiation Protection (EGRP), on Expert Group on the Implications of ICPR (International Commission on Radiological Protection) Recommendations (EGIR) and on the Expert Group on the Process of Stakeholder Involvement (EGPSI).

Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)

The representatives of SÚJB, the Permanent Mission of the Czech Republic in Vienna, the Institute of Physics of the Earth (ÚFZ) and the National Radiation Protection Institute participated in the meeting on organization budget, on further non-verification utilization of system of stations being build, and on possibility of data providing for the tsunami warning system and cooperated in preparing of manuals for individual technical-oriented activities.

The subsidiary seismologic station in Vranov near Brno (part of the International Monitoring System (IMS) in Vienna) was engaged in the first complex test of the International Monitoring System from April to June 2005. The Institute of Physics of the Earth, in cooperation with the CTBTO Preparatory Committee Secretariat, conducted two short trainings for the experts from the Balkans and from the Central Asia in Brno in May and June 2005. The SÚJB representative took part in the on-the-job training on the preparation of future specialists for the on-site inspection.

Western European Nuclear Regulators Association (WENRA)

The main target of the Western European Nuclear Regulators Association (WENRA), i.e. harmonization of nuclear safety criteria - made a substantial step forward in the last year. Inclusion of the requirements for nuclear safety in the legislation and strict observance thereof can help to increase the public trust nuclear power. Both working group finished their work (WENRA Reactor Harmonization Working Group and Working Group on Waste and Decommissioning). The working groups drew up the "minimum" requirements for nuclear safety on the basis of IAEA standards and individual national standards. The groups, based on background papers submitted by the member states, assessed then the fulfilment of such requirements. It was shown that the nuclear safety level in the countries associated within WENRA is on high level, although some requirements included in the documents are drawn up on operating level, e.g. as part of the decision, permit, etc., and they are not directly included in legally binding document such as act.

The plenary meeting of the association approved the final report, with small complements, on the results of the work carried out by both groups. The WENRA member states are currently faced with the task to incorporate the recommendations contained in the reports for individual countries in its legislation - probably the lowest level – e.g. binding instructions. The SÚJB works out the plan of this process.

The experts of the Office actively participated in the work of both groups; in the case of spent fuel and radioactive waste the SÚJB expert took the chair over this group. Within the support of WENRA activity, the SÚJB held working meetings of both groups in Prague in the course of the last year.

Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors (WWER Forum)

In July 2005, the twelfth meeting of the members of the Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors was held in Finland. During the meeting, the member states exchanged their information on the most important events that occurred at nuclear facilities and operating experiences. Also the improvement of the safety of nuclear facilities and the introduction of new technologies were discussed. The subject of the meeting also included the activity of individual regulators, including accrued organizational or legislative changes. In June 2005, a new working group dealing with the problems related to probabilistic assessment of digital I&C systems of technological processes held its first meeting in the Czech Republic.

Network of Regulators of Countries with Small Nuclear Programs (NERS)

The SÚJB is a founding member of the Network of Regulators of Countries with Small Nuclear Programs (NERS), whose members are also the regulators of Argentine, Belgium, Finland, South Africa, Hungary, Netherlands, Slovakia, Slovenia, Switzerland and Pakistan. The subjects from a wide range of utilization of nuclear energy, and in particular the nuclear power plant safety, are discussed at the annual meetings of the member states. The last meeting was held in Pakistan in September 2005. The Czech Republic did not attend this meeting for economic purposes.

UN Framework Conventions

Convention of Nuclear Safety

In 2005, the Third Review Meeting of the Convention of Nuclear Safety was held. The Report of the Czech Republic developed for the purposes of the meeting was presented by the Head of the Czech delegation, the SÚJB Chairperson. Within the discussion, the conference delegates assessed the high level of cooperation in emergency preparedness and information sharing between the Czech Republic and Germany and Austria. Also the implementation of regulations and procedures for managing emergency situations at both nuclear power plants was assessed as very good. According to the opinion of delegates, the Czech Republic should give, in the following years, particular attention to:

- Use of probabilistic analyses for the support of surveillance activity;
- Suitable support of further deepening of safety culture;
- Monitoring and assessment of power market deregulation impact on the level of nuclear safety of nuclear power plant;
- Sharing and maintaining knowledge in case of expected retirements of Office personnel.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

In the last year, the SÚJB coordinated preparation of the National Report for the needs of the Second Review Meeting of the Contracting Parties to the Joint Convention to be held in 2006. The Report approved by the Government was submitted on schedule to the Convention Secretariat (IAEA), which made it available to other contracting parties for objections.

9.3. European Union

The SÚJB's priority in the field in question was to assure participation of the experts in meetings held by the Working Parties of the Council and European Commission, which address the problems falling within the competence of the Office, and preparation of standpoints for the meetings.

The SÚJB is the director and coordinator for the representation of the Czech Republic in the EU Council Working Party on Atomic Question (AQQ) and the co-director and co-coordinator for the Working Party on Dual-use goods. In 2005, a total of 17 meetings of the AQQ were held. The main documents and discussed subjects were in particular:

- In the international area - draft treaties with Russia, China, Japan and Kazakhstan concerning the cooperation in the field of nuclear safety, and accession of EURATOM to

the Convention of Early Notification of Nuclear Accident and Convention of Aid in Case of Nuclear Accident or Emergency Event;

- Document related to new accession of EURATOM in the field of application of safeguards for nuclear materials. New EURATOM Safeguards Framework was submitted to the EU Council for approval after more than one-year negotiations (approved at the meeting held on December 21, 2005);
- Draft directive for the transport of nuclear materials and spent nuclear fuel;
- Document, which is a part of the Stability Instruments – Aid (to the third countries) in the field of nuclear safety. This discussion has been opened in October.

In relation to the Action Plan adopted in December 2004, six meetings of the ad hoc Working Party on nuclear safety and several meetings of its sub-parties were held in 2005 to draw up reports on the approach of the member states to the nuclear safety, spent fuel and radioactive waste management, and creation of funds for nuclear facility decommissioning. Three SÚJB employees are the members of the sub-parties. The SÚJB, in cooperation with ČEZ and the Radioactive Waste Repository Authority, assured processing of questionnaires drawn up by the individual sub-parties and submitted to the EU Member States for completion, and submitted completed questionnaires to the Council Secretariat. These documents are used as a basis for processing of the mentioned reports.

The stands submitted to the documents discussed by the AQG, or the instructions for the meetings of the Czech Republic representatives in other working groups dealing with problems within the competence of the Office, are approved by the Departmental Coordination Group for Nuclear Safety and Radiation Protection (RKS). In the course of 2005, this group held two meetings; however, its members are continuously consulted and acquainted in electronic form with the results of meetings of related Council and EC working groups.

SÚJB representatives also participate in meetings of European Commission Working Party dealing with problems related to radioactive waste management and transports of radioactive substances and waste, the support within the PHARE/TACIS programs and the Committees according to Art. 31 and 37 of the EURATOM Treaty. In addition, the employees of SÚJB are acquainted with meeting of other working parties on energy, science and research, non-proliferation and disarmament. They also participate in meetings of relevant RKS of other departments.

The SÚJB, in compliance with the requirements of the "acquis communautaire", assured continuous transfer of EC data, i.e.:

- a. Safeguards data to the EURATOM "Safeguards" system (see Section 8);
- b. Data from the Early Warning System to EURDEP database and data on radiation situation on the territory of the Czech Republic to the REM system (see Section 7).

In 2005, the SÚJB took part in the system of transfer of data on radiation situation in case of occurrence of radiation accident or nuclear emergency - ECURIE and participated in the CME/CMX 2005 exercise to verify the emergency preparedness (see Section 6).

Within the EURATOM Sixth Framework Program, the SÚJB takes part in the EURANOS project designed for development and implementation of the means for the forecast of radionuclide propagation in the air in the case of radiation accident and for creation of recommendations for protective measures. The SÚJB is a member of the Responder Consortium and its representative is the member of the project Steering Committee.

In addition to the above-mentioned activities, the SÚJB participated in other activities coordinated by the Ministry of Foreign Affairs and the Office's representative participated in the meeting of the Committee for European Union, as required. In compliance with the Government Resolution No. 523 dated May 4, 2005, the preparation of SÚJB for the performance of the presidency in the EU Council was commenced.

Program PHARE

Within the PHARE program, three following projects were completed in the year 2005, where the Czech Republic acts as the recipient.

- Implementation of RODOS system designed for the forecast of radionuclide propagation in the air in the case of radiation accident and for creation of recommendations for protective measures within the Czech Republic;
- Support of SÚJB decision-making in performance of the safety analyses and assessment for the WWER-440/213 type reactors under conditions of low power and during outage;
- Assistance to the Nuclear Research Institute Řež, a.s. in removal of damages caused by floods in August 2002.

In the course of the year 2005, last four projects were commenced in the field of nuclear safety:

- Development of binding method for performance of non-destructive testing of some welds of the primary circuit according to applicable methodologies within regular inspections;
- Preparation of procedures for assessment of WWER reactor pressure vessel integrity, when taking into account stainless linings;
- Specification of irradiated material mechanical properties from shutdown unit of the nuclear power plant in German Greifswald with the WWER type reactor and use of acquired results for assessment of safety and life time of the components of nuclear power plants (ongoing project).
- Validation/verification of computer programs used in safety assessment of transition states and emergency situations of nuclear power plant units with the WWER-1000 type reactor (ongoing project).

Completion of all projects is scheduled for the next year.

SÚJB takes part in planning of other projects PHARE and TACIS, where the accession countries and the states of the Former Soviet Union are the recipients at the meeting held by the PTEG and RAMG Working Groups.

10. SCIENCE AND RESEARCH

In 2005, the implementation of the new program "Research and Development for the Needs of the State Office for Nuclear Safety as the State Surveillance and State Administration Body in the Fields of Nuclear Safety, Radiation Protection and Control of Adherence to the Ban on Chemical and Biological Weapons" was commenced. Within this program, the individual projects were contracted in the form of public contracts pursuant to Act No. 40/2004 Coll., on public contracts. The optimum offers, in terms of economy, were selected, and the transparency is supported by the fact that no applicant entered any objections within the statutory time limit. The evaluation commission used, in assessment, the opinions of external

scientific workers, who commented on declared criterion "Level of scientific and organization approach of the applicant to the draft solution of the contract and rate of utilization of known, objectively relevant knowledge, verified scientific methods and procedures".

Summary of public contracts within the Science and Research:

- Overheat effect on the reactor pressure vessel integrity in case of occurrence of accident with pressure-thermal shock;
- Development and verification of best-fit method and thermal-hydraulic model of NPP for the deterministic safety analyses;
- Development, verification and introduction of new procedures, methods and methodologies of monitoring of radiation situation and human exposure with the focus on assessment of radionuclide effluents to the environment from NPPs and monitoring of their vicinity and on express methodologies for the case of radiation emergency occurrence;
- Criteria for long-term operation of nuclear power plants;
- Development of SÚJB methodology for selection of qualification criteria;
- Inclusion of burn-up effect and partial inclusion of boron effect for storage of nuclear fuel in the storage pools at WWER reactors;
- Topical problems related to radiation protection in the field of medical exposures;
- Development and experimental verification of radon curative measures under extreme conditions after historical silver and uranium mining;
- Assurance of the tasks of Radon Program of the Czech Republic resulting from the requirements for the change in search system and for evaluation of its efficiency;
- Development and application of measuring and diagnostic methods and methodologies for assessment of human exposure from natural radiation sources in buildings;
- Study on radon decay product properties in actual residential conditions depending on environmental characteristics;
- Improvement of personal dosimetry of personnel in caves accessible to public and in caves used for speleotherapy with the possibility of expansion to other underground workplaces;
- Development and verification of efficiency of the methods for monitoring of human exposures to selected mycotoxins that can be abused within the biological terrorism;
- Analysis of current economic and social aspects important for the control of protection against radiation.

In 2005, the program projects from the year 2004 were further addressed within two running programs "Research of nuclear facility safety and radiation protection for the needs of the regulatory body" and "Research and development for the needs of the State Office for Nuclear Safety as the state surveillance and state administration body in the fields of nuclear safety, radiation protection and control of adherence to the ban on chemical and biological weapons".

The departmental program of the institutional research is ensured by the National Institute for Nuclear, Chemical and Biological Protection. The Institute has been dealing with two research intentions since the year 2004:

1. Study on material and human factors for personal protection against chemical and biological substances, including their detection and identification;
2. Study on selected exposure ways in case of natural radioactivity.

For detailed information on the budget for the SÚJB research and development program see Chapter 1.4.

11. INFORMATION PROVIDED PURSUANT TO ACT NO. 106/1999 COLL., ON FREE ACCESS TO INFORMATION

Within the scope of the provision of information pursuant to Act No. 106/1999 Coll., on free access to information, a total of 67 applications were submitted, pursuant to the above mentioned act, to the State Office for Nuclear Safety in 2005 from physical or legal entities with respect to the provision of information. This number shows a significant decline against the previous years (tens of inquiries against hundreds of inquiries in the previous years).

Two lawsuits were recorded in the year 2005 by reason of breach of the above-mentioned act from the SÚJB side (both lawsuits were brought in 2004). It concerned lawsuits against non-provision of information to prosecutors - the citizens' association Greenpeace and the Citizens Initiative for Environmental Protection. In the course of the year 2005, one judgement was issued for non-adherence to this act, which cancelled SÚJB decision and returned it for new hearing.

Information was required (and also provided) in all forms accepted by law: verbally personally, by telephone, by e-mail or in written form. The applications may be divided thematically as follows:

- a) Problems concerning Temelín NPP start-up and its trial operation; number of submitted applications dropped against previous years both from public side and from media side; from the public side it is limited only to three nongovernmental organizations, and in terms of media, only the most significant national daily papers contact the SÚJB;
- b) Problems concerning radiation protection and radiation situation monitoring on the territory of the Czech Republic; number of applicants for information also dropped significantly in consequence of basic data availability on SÚJB web page;
- c) Questions concerning texts of the Atomic Act and decrees; in 2005, represented the majority among submitted applications, particularly in connection with implemented amendments and with acceptance of problems related to technical safety of some nuclear facilities, systems and components;
- d) Questions concerning the Radon Program and methodology for providing the government subsidies; are primarily represented by inspection applications verifying information provided by authorities of the locally relevant state administration;
- e) Others (general information); represent only minimum part of the applicants since an overall majority of such information is permanently available on SÚJB web pages.

SÚJB' Internet page www.sujb.cz serves as a supplement to information provided in the forms mentioned above. All information is available in Czech language, and overall majority of basic information is available also in English language. The widest public has access through the page to recent events of SÚJB activity and to basic information on SÚJB position within the state administration, organizational structure of the Office, and legal framework the SÚJB uses. The most important contact addresses are also provided. The Internet page offers also a number of documents and reports from the fields, on which the Office concentrates. The Czech Republic's National Report processed for the Convention of Nuclear Safety or Annual Reports submitted to the Government of the Czech Republic, information for international negotiations within the scope of Melk process and accession negotiations to the European Union, and from the date of the accession of the Czech Republic to the European Union also the access to complete Union legislation could be given as examples. In case of need the events that occurred in nuclear power plant operation, in the field of radiation protection, are commented in an understandable manner. Also data from continuous monitoring of radiation

situation on the territory of the Czech Republic acquired by the Early Warning System and information from seismicity monitoring network located in the vicinity of Temelín NPP are presented. The work on optimum interface with the state administration information portal operated by the Ministry of Informatics of the Czech Republic continues.

SÚJB representatives, in accordance with the obligation stipulated to SÚJB by Act No. 18/1997 Coll., informed the mayors of district authorities of radioactive waste management on the territory administered by them and of nuclear fuel transports into Czech nuclear facilities.

SÚJB fulfils its information obligations to the public also in the form of issuing bimonthly "Nuclear Energy Safety" and non-periodical series "Nuclear Facility Safety", where all general information related to nuclear safety and detailed requirements and instructions for its assurance is published. The applicant can obtain detailed information both of the content of periodicals and of acquisition possibilities on the SÚJB web page as well as at the publisher address, i.e. Nuclear Information Institute, Eliška Přemyslovna street, Prague 5 - Zbraslav. At the same time, data on radiation situation on the territory of the Czech Republic is published in the Czech Statistical Environmental Almanac issued by the Ministry of Environment and the Czech Statistical Office.

12. ACTIVITIES OF INSTITUTES CONTROLLED BY SÚJB

12.1. National Radiation Protection Institute

The National Radiation Protection Institute (SÚRO) is an organizational state component established by the decision of the Chairperson of the State Office for Nuclear Safety on May 26, 1995, which became effective on July 1, 1995. The scope of all SÚRO activities is stipulated in detail by a statute dated November 15, 1995. The Institute's basic function is to provide expert, methodical, educational, information and research activities, which relate to the state administration's role in protection against ionizing radiation in the Czech Republic.

The Institute has two branches, in Hradec Králové and in Ostrava, and smaller detached workplaces in Brno, Ústí nad Labem, Plzeň and České Budějovice.

The internal structure of the Institute is divided into four basic divisions, in compliance with the main activities:

- The Monitoring Division covers particularly the problems of artificial radionuclide content and distribution in the environment and in food chains in connection with the nuclear-power facility operation, problems of internal contamination; it participates significantly in the operation of Radiation Monitoring Network (RMS) of the Czech Republic;
- The Medical Exposure Division covers particularly the problems related to the use of ionizing radiation sources in radiodiagnostics and radiotherapy; assures operation of the X-ray laboratory in Prague and in Ostrava, a thermoluminescent dosimetry (TLD) laboratory, TLD network operation within RMS in the Czech Republic, and other special laboratory and in-situ measurements of dosimetric quantities;
- The Natural Sources Division concentrates particularly on the monitoring and evaluation of population exposed to natural radiation sources - radon and other natural radionuclides, and radiation hazard evaluation;

- The Information System Division ensures data flows, RMS database, and processing and presentation of data acquired by RMS, and participates in the operation of Early Warning System and mobile groups for ground and air monitoring.

In 2005, the National Radiation Protection Institute, as in the previous years, participated in:

- Assurance of RMS permanent and emergency staff - particularly RMS Central Laboratories, central workplaces of RMS Information System;
- Assurance of support of SÚJB Crisis Headquarters activity;
- Implementation of EU projects "RODOS" and "EURANOS" in the Czech Republic;
- Organization of comparison measurements and exercises of RMS components;
- Monitoring of exposure of population, workers with ionizing radiation sources, including nuclear facility personnel;
- Monitoring and analysis of population exposure components from natural sources (tasks specified within the Radon Program);
- Independent verification of selected dosimetric quantities and parameters of ionizing radiation sources used in radiotherapy and radiodiagnostics for the purposes of monitoring and evaluation of population radiation load in medical exposure;
- Monitoring and assessment of occupational disease as a result of ionizing radiation exposure;
- Public information on radiation situation in the Czech Republic;
- Processing and transfer of data from RMS in the Czech Republic to REM database and continuous transfer of data from the Early Warning System to EURDEP database.

A part of all mentioned activities of the Institute is the research and development activity. The subjects of SÚRO research programs always reflect current practical needs of the field according to the assignment of the promoter as well as the long-term conceptual development of the Institute. At the beginning of the year 2005, completed research intentions of the SÚRO institutional research addressed in the period 1999 - 2004 were defended:

- Study on radionuclide behaviour in human organism and development of new approaches to exposure estimate from internal contamination;
- Study on artificial radionuclides in human and working environment;
- Study on the Czech population exposure from natural sources.

In 2005, the SÚRO was solving 3 program projects raised by SÚJB:

- Determination of radiation load of patients during examinations in X-ray diagnostics;
- Analysis and processing of selected data required for development and verification of software used for assessment of radiological consequences of serious accidents;
- Analysis of current problems related to radiation protection in the field of the Czech population exposure to ionizing radiation.

Furthermore, the SÚRO solved or participated in 4 projects within the Internal Grant Agency of the Ministry of Health, one project within the Grant Agency of the Czech Republic and 4 international projects (EU, IAEA).

In the field of training and education, the SÚRO, in cooperation with SÚJB and IAEA, assured in the year 2005 the expert part of the fellowships for foreign participants and provided expert consultations to the personnel of state authorities, private companies and to public, and arranged lectures, practical trainings, information and education seminars for the students of the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague and SÚJB personnel.

The SÚRO further took part in the tests of special professional qualification, reviewed the documentation required for granting of activities important in terms of radiation protection (radon problems) and participated in the inspection of companies operating in the field of radon problems.

Detailed description of all SÚRO activities, including a results overview, is presented in the annual Report on SÚRO Activities, which is published, together with other information on SÚRO activities and results of the monitoring of radiation situation on the territory of the Czech Republic, on SÚRO Internet page – www.suro.cz, and in Part II. to this Annual Report.

12.2. National Institute for Nuclear, Chemical and Biological Protection

The National Institute for Nuclear, Chemical and Biological Protection is a contributory organization established by the State Office for Nuclear Safety. Its activity is mostly financed from the state budget and is partially covered by revenues from expert activities. In 2005, the Institute was assigned 58 job positions to fulfil assigned tasks (a total of 63 physical persons were employed).

The main purpose of the establishment of SÚJCHBO is to assure measurements for assessment of the effects of nuclear, chemical and biological substances on human and environment, including assessment of the degree of individual and collective means for human protection against such substances. A part of the activity is also research and development in this field. An important task involves the support of surveillance activity performed by SÚJB inspectors in the divisions of radiation protection and non-proliferation of chemical and biological weapons. The SÚJCHBO also performs training activity.

The above-mentioned activity is ensured by the nuclear, chemical and biological protection divisions, and a separate division for surveillance support. The majority of the division workplaces are accredited by the Czech Accreditation Institute.

Activity of SÚJCHBO Workplaces in 2005

- **Nuclear Protection Division**

The division workplace dealt particularly with the tasks resulting from the "Radon Program of the Czech Republic", i.e. preparation and assessment of passive track detectors. Another important activity involved the performance of personal dosimetry for the state-owned enterprise s.p. DIAMO and monitoring in the vicinity of existing and former workplaces handling of uranium mining in the Czech Republic as well as radiochemical and gamma-spectrometric analyses (water, soil, sediments, building materials, samples of vegetable and animal origin, fallout, etc.).

The Authorized Metrology Center for measurements of activity concentration of radon (in the air) and equivalent activity concentration of radon (K 113) operates within the division. The Center carried out verification of instruments used for measurements of such quantities and technical tests in order to approve new types of instruments.

- **Chemical Protection Division**

The main activity of division workplaces consisted in performance of accredited and non-accredited tests (important set of tests included e.g. testing of protective clothing for the Armed Forces of the Czech Republic and testing of filtering protective materials). The workplace also dealt with the development of new methods for improving the quality of accredited tests. Another field of activity includes technical support of surveillance performed by SÚJB inspectors and identification of unknown findings and consignments brought to the SÚJCHBO by members of the Fire Rescue Service or the Police of the Czech Republic. The personnel also participated in solutions of various emergency situations in the field (using mobile laboratories).

- **Biological Protection Division**

There are two workplaces included in this division - Laboratory for human monitoring in extreme conditions is focused on expertises and testing of protective equipment, clothing and human in extreme climatic conditions. The workplace of climate control chamber with the setting of microclimatic parameter (from -50 to + 100°C) and defined physical load is primarily used for such purposes. The workplace dealt with performance of accredited tests and solution of science and research tasks.

Second workplace – Laboratory for biological monitoring and protection is focused on detection of hazardous biological agents and toxins stipulated in Decree No. 474/2002 Coll. by means of microbiological cultivation, mass spectrometry and molecular biology. In 2005, the workplace dealt primarily with detection of such agents in findings and consignments with unknown content brought to SÚJCHBO for identification; an important task is also assurance of SÚJB assistance in inspection activities in this field.

- **Separate Division for Surveillance Support**

The workplace is dislocated in Kamenná and in Dolní Rožínka, and its activity is solely focused on the assurance of assistance for surveillance activity performed by SÚJB inspectors. The assistance consisted in measuring, sampling and analyses thereof. The workplace also ensures the operation of air monitoring point of the Radiation Monitoring Network.

Research and Development

In 2005, the expert workplaces of SÚJCHBO dealt with the solution of research and development tasks to a significant extent. Both the institutional research tasks and the specific research projects were addressed, while the SÚJB, Ministry of Defence of the Czech Republic and Ministry of Industry and Trade of the Czech Republic granted specific subsidy for the latter.

International Research Project IMPACT

The SÚJCHBO participated in the pilot project IMPACT that should be subsequently one of the research programs to be included in the Seventh Framework Program of the EU addressed in 2007-2013. This project is focused on detection of substances that can be abused for the use in weapons of mass destruction (chemical, biological, radiological and nuclear (CBRN) substances) and on elimination of effects of terrorist attacks with the use of such substances.

The SÚJCHBO handled the tasks together with other foreign partners of the consortium. In 2005, which was the first year of task handling, 4 reports were submitted to the European

Commission. The SÚJCHBO arranged international conference "First Responder Workshop" in Prague for project responders.

Other activities of the SÚJCHBO involve activities resulting from the Institute integration into the Integrated Rescue System on the basis of the "Cooperation Agreement" concluded with the General Directorate of Fire Rescue Service within the Ministry of Interior of the Czech Republic. In 2005, the SÚJCHBO participated in several collaboration exercises with other members of the Integrated Rescue System.

The training and education activity is also significant. The Institute assures training for the students of the University of South Bohemia (pursuant to agreement concluded between the and the University of South Bohemia University in České Budějovice on establishment of Clinical Workplace) and the Technical University – Faculty of Safety Engineering in Ostrava, courses for the members of the Fire Rescue Service and the Police of the Czech Republic focused on protection against chemical and biological terrorism, and further lecture activity.

The international cooperation with the TNO Haag, Netherlands continued in 2005 and new cooperation with the relevant laboratories in England, Federal Republic of Germany and Poland has been established in the field of radon metrology. The SÚJCHBO, within the activities coordinated by SÚJB, provided support to OPCW in Haag in 2005.

Detailed information on SÚJCHBO activity is included in the annual report of the Institute published on the Internet page www.sujchbo.cz.

USED ABBREVIATIONS AND ACRONYMS

AČR	Armed Forces of the Czech Republic
AQG	Atomic Questions Group
AZ	Core
BTWC	Biological and Toxin Weapons Convention
CRPO	Central Registry of Occupational Exposure
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization (PTS - Provisional Technical Secretariat)
CWC	Chemical Weapons Convention
ČIA	Czech Accreditation Institute
ČLS J.E.P.	Czech Medical Association of J. E. Purkyně
ČSÚ	Czech Statistical Office
EDU	ČEZ, a.s., Dukovany Nuclear Power Plant
EK	European Commission
ETE	ČEZ, a.s., Temelín Nuclear Power Plant
EU	European Union
F	Coefficient of Unbalance of Radon and Products of its Transformation
FJFI ČVUT	Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague
FO	Physical Protection
HZS	Fire Rescue Service
CHÚUP	Uranium Industry Chemical Treatment Plants
IAEA	International Atomic Energy Agency
INES	International Nuclear Event Scale
INSARR	Integrated Safety Assessment of Research Reactors
IS RMS	Information System of Radiation Monitoring Network
IZ	Ionizing Radiation
IZS	Integrated Rescue System
JE	Nuclear Power Plant
JZ	Nuclear Facility
KKC	Emergency Response Center
KŠ	Crisis Headquarters
LaP	Safe Operation Limits & Conditions
LRKO	Laboratory for Monitoring of Environment Radiation
MAAE	Czech equivalent of IAEA (for IAEA see above)
MAPE	Name of former uranium reprocessing plant
MBA	Material Balance Area
MF	Ministry of Finance of the Czech Republic
MMKO	Air Monitoring Point
MO	Ministry of Defence
MPSV	Ministry of Labour and Social Affairs
MPO	Ministry of Industry and Trade of the Czech Republic
MV	Ministry of Interior of the Czech Republic
MV-GŘ HZS ČR	Ministry of Interior – the General Directorate of Fire Rescue Service of the Czech Republic
MZ	Ministry of Health of the Czech Republic
MZe	Ministry of Agriculture of the Czech Republic

MZV	Ministry of Foreign Affairs
MŽP	Ministry of Environment of the Czech Republic
NEA	Nuclear Energy Agency
NEA/OECD	Nuclear Energy Agency within the Organization for Economic Cooperation Development
NERS	Network of Regulators of Countries with Small Nuclear Programs
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NRC	US Nuclear Regulatory Commission
OAR	Radon Activity Concentration
OECD	Organization for Economic Cooperation and Development
OKŘ	Crisis Management Authority
OPCW	Organization for the Prohibition of Chemical Weapons
ORS SR	Operating Control Group of the Commission of the Government of the Slovak Republic for Radiation Accidents
PACT	Program Assistance for Cancer Treatment
PČR	Police of the Czech Republic
PS	Working Group
PSA	Probabilistic Safety Assessment
PTEG	PHARE and TACIS Expert Group
PTS	Pressure-Thermal Shock
RAMG	Regulatory Assistance Management Group
RAO	Radioactive Waste
RAT	Risk Biological Agents and Toxins
RC	Regional Center
RKS	Departmental Coordination Group for Nuclear Safety and Radiation Protection
RMS	Radiation Monitoring Network
RO	Radiation Protection
ROR	Reactor Scram
SIS	Specialized Inspection Teams
SKŘ	Instrumentation and Control System, I&C System
SSAC	State System of Accounting for and Control of nuclear materials
SVÚ	State Veterinary Administration of the Czech Republic
SÚJB	State Office for Nuclear Safety
SÚJCHBO	National Institute for Nuclear, Chemical and Biological Protection
SÚRAO	Radioactive Waste Repository Authority
SÚRO	National Radiation Protection Institute
SVZ	Early Warning System
SZÚ	National Institute of Public Health
TLD	Thermoluminescent Dosimetry
UOCHL	Certain Organic Chemical Substances
URZ	Sealed Radionuclide Sources (of radiation)
U.S. NRC	US Nuclear Regulatory Commission
ÚFZ	Institute of Physics of the Earth
ÚJD SR	Nuclear Regulatory Authority of the Slovak Republic
ÚJF ČAV	Nuclear Physics Institute of the Academy of Science of the Czech Republic
ÚJV Řež, a.s.	Nuclear Research Institute Řež, a.s.
ÚNMZ	Czech Office for Standards, Metrology and Testing
ÚRAO	Radioactive Waste Repository

VaV	Science and Research
VAO	High-Level Radioactive Waste
VJP	Spent Nuclear Fuel
VRAT	High-level Risk Biological Agents and Toxins
VTÚO	Military Technical Institute of Protection in Brno
VZP	General Health Insurance Company
VÚOS, a.s.	Organic Synthesis Research Institute, a.s., in Pardubice – Rybitví
VÚV T.G.M. Praha	T. G. Masaryk Water Research Institute in Prague
WENRA	Western European Nuclear Regulators' Association
WWER Forum	Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors
ZHN	Weapons of Mass Destruction
ZHP	Emergency Planning Zone
ZIZ	Ionizing Radiation Source