

REPORT ON SÚJB RESULTS ACHIEVED IN THE SUPERVISION OF
NUCLEAR FACILITIES
AND RADIATION PROTECTION
FOR 2006

PART I

CONTENTS

1. STATE OFFICE FOR NUCLEAR SAFETY	4
1.1. Information on the Office's Position and Sphere of Its Authority.....	4
1.2. Information on the Office's Competence (Number of Inspectors, Control Regimes, Administration, Personnel Qualification, Training, etc.).....	5
1.3. Information on Results of the Internal Audit and Internal Financial Control.....	7
1.3.1. Information on Results of the Internal Audit	7
1.3.2. Information on Results of the Internal Financial Control	7
1.4. Economic Indicators.....	8
1.5. Legislative Activities.....	14
1.5.1. Legal Regulations.....	14
1.5.2. International Agreements, Treaties, Conventions	15
1.5.3. Internal Regulations of the State Office for Nuclear Safety	16
1.5.4. Administrative Proceedings	16
2. NUCLEAR SAFETY	17
2.1. Dukovany NPP	17
2.1.1. Assessment	17
2.1.2. Inspection Activities.....	17
2.1.3. Final Assessment of Operation Safety	18
2.2. Temelín NPP	19
2.2.1. Assessment	19
2.2.2. Inspection Activities.....	21
2.2.3. Final Assessment of Operation Safety	22
2.3. Research Nuclear Facilities	23
2.3.1. Assessment	23
2.3.2. Inspection Activities.....	24
2.3.3. Final Assessment of Operation Safety	24
2.4. Other Nuclear Facilities	24
2.5. Safety Analyses	24
2.6. Assuring Technical Safety of Classified Equipment.....	26
3. SPENT NUCLEAR FUEL AND RADIOACTIVE WASTE MANAGEMENT, OR DECOMMISSIONING	27
3.1. Radioactive Waste Production and Management.....	27
3.1.1. Storage, Treatment and Transport of Radioactive Waste	27
3.1.2. Storage of Radioactive Waste	27
3.1.3. Spent Nuclear Fuel Storage Facilities	28
3.1.4. Institutional Waste.....	29
3.1.5. Decommissioning.....	29
3.2. Final Assessment.....	29
4. TRANSPORT OF NUCLEAR MATERIALS AND PHYSICAL PROTECTION OF NUCLEAR FACILITIES.....	30
4.1. Transports of Nuclear Materials and Radioactive Substances.....	30
4.2. Physical Protection of Nuclear Facilities	30
5. RADIATION PROTECTION.....	31
5.1. Ionizing Radiation Sources and Respective Associated Workplaces	31
5.1.1. Number of Sources and Workplaces.....	31
5.1.2. Emergency Cases	33
5.2. Assessment and Inspection Activities	34
5.2.1. Permit Granting and Revocation	34
5.2.2. Evaluation of Inspections	35

5.2.3.	Remediation of Burdens from Past	37
5.3.	Exposure Control.....	37
5.3.1.	Personnel Exposure Control.....	38
5.3.2.	Population Exposure Control	39
5.3.3.	Assessment of Exposure Consequences.....	41
6.	EMERGENCY PREPAREDNESS.....	42
6.1.	Assessment and Inspection Activity	42
6.2.	Crisis Management.....	43
6.2.1.	Crisis Headquarters Activity	43
6.2.2.	Emergency Exercises	44
7.	MANAGEMENT OF THE RADIATION MONITORING NETWORK IN THE CZECH REPUBLIC.....	44
7.1.	Radiation Monitoring Network Control, Operation and Recovery.....	45
7.2.	Summary of Radiation Monitoring Results	45
8.	NON-PROLIFERATION OF NUCLEAR, BIOLOGICAL AND CHEMICAL WEAPONS.....	46
8.1.	Non-Proliferation of Nuclear Weapons.....	47
8.1.1.	Inspections and Their Findings	47
8.1.2.	Granted Permits and Communication	48
8.1.3.	International Aspects.....	49
8.2.	Control of the Prohibition of Chemical Weapons.....	50
8.2.1.	Inspection Activity and Communication.....	50
8.2.2.	International Aspects.....	52
8.3.	Control of the Prohibition of Biological and Toxic Weapons	52
8.3.1.	Inspection Activity	52
8.3.2.	International Aspects.....	53
9.	INTERNATIONAL COOPERATION	54
9.1.	Bilateral Cooperation	54
9.2.	Multilateral Cooperation	57
9.2.1.	International Atomic Energy Agency	57
9.2.2.	Other International Organizations and Associations.....	59
9.2.3.	UN Framework Conventions	61
9.3.	European Union.....	61
9.4.	PHARE Program.....	63
10.	RESEARCH AND DEVELOPMENT.....	63
11.	PROVIDING INFORMATION PURSUANT TO ACT NO. 106/1999 COLL., ON FREE ACCESS TO INFORMATION.....	64
12.	ACTIVITY OF THE NATIONAL INSTITUTE FOR NUCLEAR, CHEMICAL AND BIOLOGICAL PROTECTION.....	66
12.1.	Field of Nuclear Protection	67
12.2.	Field of Chemical Protection.....	67
12.3.	Field of Biological Protection	68
12.4.	Surveillance Support	68
12.5.	Research and Development.....	68
12.6.	Other Activities of SÚJCHBO	69
13.	ACTIVITY OF THE NATIONAL RADIATION PROTECTION INSTITUTE.....	69
13.1.	Research Activity	70
14.	USED ABBREVIATIONS AND ACRONYMS	72

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 toxic 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 toxic weapons, encompasses particularly:

- State supervision of nuclear safety of nuclear facilities, nuclear items, physical protection of nuclear facilities, radiation protection, and emergency preparedness of nuclear facilities and workplaces handling ionizing radiation sources.
- Licensing of activities as specified by Act. No. 18/1997, e.g. for the sitting and operation of nuclear facilities and workplaces handling very significant ionizing radiation sources, for handling ionizing radiation sources and radioactive wastes, transportation of nuclear materials and radionuclide emitters.
- Reviewing and approving documentation related to nuclear safety and radiation protection as laid down by the Atomic Act, limits and conditions for the operation of nuclear facilities, methods of physical protection implementation, emergency rules for the transport of nuclear materials and selected radionuclide emitters, and internal emergency plans of nuclear facilities and workplaces handling ionizing radiation sources.
- Specifying conditions and requirements for radiation protection of the public and personnel handling ionizing radiation sources (e.g. laying down limits and defining controlled zone s), specifying emergency planning zones and licensees' emergency preparedness requirements under the Atomic Act.
- Monitoring the status of exposure of the public and personnel handling ionizing radiation sources.
- Central administration of activities of the Radiation Monitoring Network in the Czech Republic and international exchange of radiation situation data.
- Managing the national system of nuclear materials accountancy and control of, national record-keeping systems for licensees, selected import and export items, ionizing radiation sources, and exposure of the public and personnel handling ionizing radiation sources.
- Professional cooperation with the International Atomic Energy Agency.
- Providing relevant radioactive waste management information to municipalities and district administration bodies and relevant information concerning the results of activities of the SÚJB to the Government of the Czech Republic
- Coordination of activities dealing with tasks following from the international treaties and national acts on banning development, production, stockpiling, the use and proliferation of nuclear, chemical, bacteriological (biological) and toxic weapons and on their disposal;

- Ensuring technical safety of classified equipment used in the area of nuclear energy;
- Providing information and drawing up annual reports on the Office's activities submitted to the Czech government and to the public, and pursuant to Section 27 of Act No. 2/1969 Coll., delivering information and basic documentation to the government, ministries and other central bodies of the state administration on their request.

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

The SÚJB's working positions (total 197) as given by systematisation for 2006 were continuously staffed.

The Nuclear Safety Division employed total of 54 persons at the end of the year 2006, of which 41 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).

According to systematisation, *the Radiation Protection Division* employed a total of 75 persons, of which 53 are radiation protection inspectors and 5 are assistant inspectors; the rest included other employees.

Within the framework of systematisation, *the independent Emergency Response Centre* employed total of 7 persons, of which 2 are radiation protection inspectors, one is the nuclear safety inspector and one is the assistant inspector.

According to systematisation, *the Department of Non-Proliferation* employed 18 persons at the end of the year 2006, of which:

- *The Unit for Control of the Prohibition of Biological Weapons* employed 4 persons, all in a position as inspector,
- *The Unit for Control of the Prohibition of Chemical Weapons* employed 5 persons, all in a position as control workers,
- *The Unit of Nuclear Non-Proliferation* employed 7 persons, of whom 5 are nuclear safety inspectors, one is the specialist, one is the assistant inspector.

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 member states, departmental research and development program management, awarding public contracts, 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 5 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.

Other employees carried out professional or administrative activities in the departments subordinate directly to SÚJB's Chairperson (European Union Unit, internal audit, security manager) or in deputies' secretariats.

Personnel Qualification

The qualification pattern of SÚJB personnel remains favourable. The highest number of the total number of 197 employees is graduates (150), of whom there are 6 graduate bachelor's employees. Except for two, other employees received higher technical or secondary technical education. Nineteen employees received academic degree and four Office's employees were conferred M.B.A (Masters of Business Administration). Among other authorities of the state administration, the SÚJB is on the first place 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-two employees aged to 35 years were employed at SÚJB, 39 employees aged between 35 – 45 years, 115 employees aged between 45 – 60 years and 21 employees aged above 60 years. The SÚJB's staffing is quite stabilized; nine 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 of special training is a combination of general and specialized education of all employees irrespective of position or activity performance. The preparation of personnel in 2006 was primarily focused on training of new assistant inspectors, further on daily English and French language courses, training for new rules of administrative procedure and top management education. A part of the special training of the assistant inspectors is also the ethics of inspector behaviour (independence, appearance adequacy, etc.).

Within the framework of training provided for inspectors, the special course focused on nuclear technologies was, on the strength of the trade contract, organized in the Specialized Training Centre of the ČEZ, a.s. company in Brno on repeated occasions. Other SÚJB inspectors from nuclear power plants completed training on full-range simulator of the control system of nuclear power plant and improved thus significantly their qualification for their inspection activities. The inspectors participate also in SÚJB internal seminars organized for every significant event or event of interest from the viewpoint of SÚJB sphere of action. The seminars are especially focused on event description and cause analysis.

The Office used the educational programmes organized by the State Administration Institute or other agencies to train SÚJB's control workers in other fields related to the performance of their function.

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

1.3.1. Information on Results of the Internal Audit

The Audit Department carried out six regular audits and one extraordinary audit in 2006. The audits were focused on the area of:

- Performance of State Information Policy,
- Activities of the chief clerks of the Phare project,
- Financial contributions to the Office's personnel feeding,
- Records and reporting of the use of company cars,
- Deployment of the SÚJB's personnel,
- Fulfilment of the metrological rules in the Office's conditions.

The extraordinary audit was carried out at the established budgetary organization the National Radiation Protection Institute (SÚRO), and it was related to the observance of the financial regulations of the Project - Alpha - Risk No. 516483.

The auditor determined 10 recommendations in his/her reports and discussed them with the entities under inspection. The recommendations were particularly focused on improvement of the quality of the internal regulations.

In order to prevent or mitigate existing risks, the auditor imposed eleven remedial measures. No significant findings were detected by internal audit, which would impose an obligation on the Office to act in accordance with Section 22 Paragraph 6 of the Act on Financial Control.

1.3.2. Information on Results of the Internal Financial Control

In 2006, the financial controls focused on security of the protection of public funds against risks, irregularities or other deficiencies were carried out. The controls were carried out on the basis of relevant legal regulations, SÚJB's internal regulations and regulations of departmental institutes. They related to selected fields of SÚJB department activity, such as economy in expenditures, management of national property, observance of the financial discipline, etc. The controls and examinations were carried out at the Headquarters of the SÚJB, its Regional Centres and selectively in the institutes established by the Office - the contributory organization - the National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO) and the organizational state component – the SÚRO.

A total of 14 controls were carried out. In addition, the facts related to observance of Act No. 320/2001 Coll., on financial control, and Decree No. 416/2004 Coll., were monitored, verified and analysed. Two of the controls were extraordinary, unplanned. They concerned the invoicing examination at the Headquarters of the SÚJB and the financial control for selected research and development task of the SÚRO.

Likewise in the past, based on controls, examinations and monitoring the financial controller proposed certain recommendations. These were based on detected current state and prediscussed with the employees concerned. A total of eight recommendations were proposed and discussed. Five of them have the character of progressive long-term implementation; the other three were completely fulfilled in the course of the control. The fulfilment of proposed recommendations is assessed at management meeting on the basis of presented reports of responsible employees, to whom the recommendations applied in accordance with their managing and control activity.

The character of deficiencies revealed in the year 2006 could not adversely affect the results of the activity of the SÚJB or granted state administration department.

1.4. Economic Indicators

Throughout 2006, the management of the Chapter 375 – SÚJB - followed Act No. 543/2005 Coll., on the Czech State Budget for 2006.

To use its competencies, pursuant to the above-mentioned act and its annexes, the SÚJB was assigned budgeted expenses in total amount of CZK 378,245 thousand and imposed a performance of non-tax budget revenues in the amount of CZK 1,200 thousand for 2006. Within the framework of total expenditures of the Chapter, the expenditures on asset reproduction financing were determined in the amount of CZK 70,000 thousand and the staff expenditures and expenditures on other payments for work performed were determined in the amount of CZK 96,825 thousand. Such expenditures within the framework of the Chapter ensured salaries for the activities performed by total of 298 employees of the SÚJB department.

In fulfilling its duties, the SÚJB used assets with total value of CZK 1,033,310 thousand. Material structure of the assets corresponds to Office's mission.

Total review of binding indicators of the approved budget of SÚJB Chapter for 2006 is indicated in Table No. 1.1.

Table. No. 1.1

(in “000” CZK, %)

Indicator proposal	Budget		Reality	% of ajusted budget perform.
	Approved	Adjusted		
General indicators				
Total revenues	1 200	1 200	3 199	266.6
Total expenditures	378 245	407 136	406 893	99.9
Section indicators				
Staff expenditures and other payments for work performed	96 825	103 288	103 013	99.7
itemized: staff expenditures	96 331	102 491	102 486	100.0
Mandatory insurance paid by employer	33 766	35 923	35 849	99.8
Transfer of fund for social and cultural requirements	1 927	2 052	2 050	99.9
Staff expenditures and other payments for work performed in the state administration	74 695	77 286	77 015	99.6
itemized: staff expenditures	74 231	76 519	76 518	100.0
Total research and development expenses	52 330	52 849	51 335	97.1
therein: total institutional expenses	19 240	19 240	19 554	101.6
total specific expenses	33 090	33 609	31 781	94.6
National research program	0			
Programs within the competence of providers	6 110	6 110	6 109	100
Public contracts	26 780	26 780	25 110	93.8
Specific partial indicators - revenues				
Non-tax revenues, capital revenues and grants accepted	1 200	1 200	3 199	266.6
Specific partial indicators - expenses				
Performance of competencies of state administration and emergency management	273 153	257 278	256 752	99.8
itemized: Radon Program	3 000	3 000	2 959	98.6
Provision of preparation for emergency situations according to Act No. 240/2000 Coll.	2 000	4 990	4 990	100.0
Performance of supporting activities	105 092	149 858	150 141	100.2
itemized: international development cooperation	0	2 900	2 900	100.0

A total of 21 budget measures with external impact increased the approved budget of expenditures by CZK **28,891** thousand in total. Budget measures related particularly to provision of performance of state supervision of technical safety of classified equipment in nuclear energy, international development aid, Radon Program, cofinancing of the EU IMPACT project, and to the process of return of spent nuclear fuel from research reactors to the state of manufacturer (Russian Federation).

Independent budget measure implemented on SÚJB request by the Ministry of Finance related to correlated changes between the following indicators: performance of competencies of state administration and emergency management, and performance of supporting activities. The change ensured mainly the program support of reproduction of asset required for performance of activities related to support of SÚJB competencies, and it is budgetary neutral.

The impact of budget measures on staff expenditures amounted to CZK **6,160** thousand; it relates to already mentioned performance of state supervision and implementation of development and research tasks by the SÚRO.

Summary of assets that the SÚJB is entitled to manage and its development is indicated in Table No. 1. 2.

Table. No. 1.2

(in “000” CZK, index, %)

Indicator	Balance as of January 1, 2006			Balance as of Dec. 31, 2006			Chapter 2006	
	SÚJB	SÚRO	Chapter	SÚJB	SÚRO	Chapter	Development	Structure
Total assets	744 743	223 015	967 758	791 237	242 073	1 033 310	1.07	100.0
Total fixed assets	720 780	214 590	935 370	763 687	234 240	997 927	1.07	96.6
Intangible fixed assets	46 567	38 689	85 256	49 842	39 519	89 361	1.05	8.6
Tangible fixed assets	674 213	175 901	850 114	713 845	194 721	908 566	1.07	87.9
Financial investments	0	0	0	0	0	0		0.0
Total current assets	23 963	8 425	32 388	27 550	7 833	35 383	1.09	3.4
Inventories	33	0	33	140	0	140	4.24	0.0
Total receivables	1 262	136	1 398	1 233	429	1 662	1.19	0.2
Total financial assets	11 628	3 338	14 966	11 531	3 249	14 780	0.99	1.4
Budget profit (loss) accounts	11 040	4 951	15 991	14 646	4 155	18 801	1.18	1.8
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 fulfilment of tasks 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 technology equipment used mainly for the operation of Radiation monitoring network, operation of Emergency Response Centre and other crucial workplaces of the department. Company cars and related equipment, intended primarily for the supervision and inspection activities performed by the SÚJB staff throughout the Czech Republic, form an integral part of assets structure and value. Technical and technological

level of the assets, in particular of instrumentation and information 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 these assets caused especially by the prices, which copy the technological development.

The assets within the Office and the SÚRO are not depreciated; the assets within the SÚJCHBO, were depreciated in accordance with the current legislation.

A part of the assets in the SÚJB Chapter includes receivables in the amount indicated in the previous review. The department reports, in the dates after maturity, receivables related to assets problem resulting from the activity of the former SÚJB employee of the car pool management – claim filed with the relevant court, and receivables resulting from unsettled penalties applied in the administrative proceedings – claim for recovery filed with the relevant revenue offices (receivables in higher volume, with date of maturity before/after maturity). Increase in receivables at the SÚRO represents provided operation advances on media.

Performance of Revenues

Table. No. 1.3

(in “000” CZK, %)

Org. unit	Budget identif.	Revenue indicator	Budget		Real revenue	% of adjusted budget perf.	Revenue struct.
			Approved	Adjusted			
SÚJB			600	600	2 352	392.0	100.0
	0000 211	Revenues from SÚJB activities	300	300	10	3.3	0.4
	0000 213	Revenues from asset lease	300	300	202	67.3	8.6
	0000 214	Revenues from interests and realized financial investment	0	0	16		0.7
	0000 221	Received penalty payments	0	0	80		3.4
	0000 232	Other non-tax revenues	0	0	603		25.6
	0000 311	Revenues from fixed assets sold	0	0	36		1.5
	0000 413	Transfers from own funds	0	0	1 405		59.7
SÚRO			600	600	847	141.17	100.0
	0000 211	Revenues from SÚRO activities	600	600	686	114.33	81.0
	0000 214	Revenues from interests and realized financial investment	0	0	1		0.1
	0000 232	Other non-tax revenues	0	0	160		18.9
Total			1 200	1 200	3 199	266.58	-

Actual attained revenues result especially from unscheduled activity, e.g. compensations, penalty payments, other non-tax revenues. They are more likely contingent revenues, which may not be more specifically planned with respect to their character (e.g. revenues from compensations or penalties).

It results from the structure of actual revenues that the activity of the 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.

Total Review of Drawing on the Expenditures

Table No. 1.4

(in “000” CZK, %)

Ident.	Classification by lines of expenditures	Budget		Actual drawing	% of drawing	Expenditure structure	
		Approved	Adjusted			Current and capital	Total expenditures
Current expenditures							
2161	SÚJB Central Body activity	203 653	206 853	206 538	99.8	60.8	50.8
2180	SÚJB research and development	52 330	43 945	44 388	101.0	13.1	10.9
2191	SÚJB international cooperation	14 396	32 033	31 032	96.9	9.1	7.6
5261	Emergency management	2 000	4 990	4 987	99.9	1.5	1.2
6222	Development foreign aid	0	2 900	2 900	100.0	0.9	0.7
	SÚJB in total	272 379	290 721	289 845	99.7	85.3	71.2
3779	SÚRO activity	38 366	40 261	41 145	102.2	12.1	10.1
3780	SÚRO research and development	0	8 904	8 876	99.7	2.6	2.2
	SÚRO in total	38 366	49 165	50 021	101.7	14.7	12.3
	Total current expenditures	310 745	339 886	339 866	100.0	100.0	83.5
Capital expenditures							
2161	SÚJB Central Body activity	67 500	45 435	45 226	99.5	67.5	11.1
2180	SÚJB research and development	0	0	0		0.0	0.0
3779	SÚRO activity		21 815	21 801	99.9	32.5	5.4
	Total capital expenditures	67 500	67 250	67 027	99.7	100.0	16.5
	Total expenditures	378 245	407 136	406 893	99.9	x	100.0

The expenditures on own activities of both organizational units of the state (in case of the SÚJB, including SÚJCHBO contribution) represent a significant part of the expenses on performance of competencies laid down in the Chapter.

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.

Expenditures on Research and Development

Basic review of the expenditures on research and development is shown in the following table.

Table. No. 1.5

(in "000" CZK, %)

Classification by lines of expenditures		Budget		Actual drawing	% of drawing	Expenditures structure
		Approved	Adjusted			
Total expenditure on research and development		52 330	52 849	53 264	100.8	100.0
therein:	Institutional expenditure on R&D	19 240	19 240	19 533	101.5	36.7
	Specific expenditure on R&D	33 090	33 609	31 721	94.4	59.6
Contributions of SÚJCHBO		21 090	21 810	22 253	102.0	41.8
therein:	Institutional expenditure	19 090	19 090	19 533	102.3	36.7
	Specific expenditure	2 000	2 720	2 720	100.0	5.1
SÚRO transfers		0	8 904	8 876	99.7	16.7
therein:	Institutional expenditure	0	0	0	-	0.0
	Specific expenditure	0	8 904	8 876	99.7	16.7
Grants/transfers to universities		0	3 450	3 450	100.0	6.5
therein:	Institutional expenditure	0	0	0	-	0.0
	Specific expenditure	0	3 450	3 450	100.0	6.5
Grants to entrepreneurial entities		30 890	18 335	16 675	90.9	31.3
therein:	Institutional expenditure	0	0	0	-	0.0
	Specific expenditure	30 890	18 335	16 675	90.9	31.3
Associated expenditure (OOV, transfers to RF)		350	350	2 010	574.3	3.8

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. The SÚJB supported total of twenty projects from the specific means intended for research and development in 2006.

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.

It results from the table that the resources for SÚJB asset reproduction program financing were drawn in accordance with the adjusted budget, which corresponded 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 the SÚJB and its technical background.

In view of the development of drawing of the program expenditure on asset reproduction, it was not necessary to execute the operations related to transfers in relation to the Reserve Fund in the SÚJB Chapter in the year 2006.

Table. No. 1. 6

(in "000" CZK, %)

Identification	Specific classification of expenditure	Budget		Actual drawing	% of drawing	Expenditure structure
		Approved	Adjusted			
2161 6111	Software	2 550	4 185	4 025	96.2	5.8
2161 6121	Buildings, halls and structures	13 450	21 797	21 794	100.0	31.2
2161 6122	Machines, instruments and devices	42 500	9 035	9 027	99.9	12.9
2161 6123	Transport means	3 500	1 766	1 765	99.9	2.5
2161 6125	Computer technology	5 500	5 092	5 084	99.8	7.3
2162 6129	Tangible fixed asset purchase	0	150	121	80.7	0.2
2161 6351	Investment grants set up by PO	0	3 410	3 410	100.0	4.9
Total SÚJB capital expenditure		67 500	45 435	45 226	99.5	64.8
2161 5171	Asset maintenance and repairs	2 500	2 750	2 736	99.5	3.9
Total SÚJB program expenditure on asset reproduction		70 000	48 185	47 962	99.5	68.7
3759 6111	Software	0	784	784	100.00	1.1
3759 6121	Buildings, halls and structures		4 537	4 536	99.98	6.5
3759 6122	Machines, instruments and devices	0	16 394	16 381	99.92	23.5
3759 6125	Computer technology	0	100	100	100.00	0.1
Total SÚRO capital expenditure		0	21 815	21 801	99.9	31.3
Total program expenditure on asset reproduction in the SÚJB Chapter		70 000	70 000	69 763	99.7	100.0

Expenditure on International Cooperation

Substantially superior position of the Czech Republic within international scale in terms of access to nuclear safety and radiation protection 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 from 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.

Provision for financing the costs of manufacture of transport casks of spent nuclear fuel from research reactors to the country of origin is an independent, budgetary significant action. This action was secured in terms of budget in linkage to Czech Government Decree No. 608/2006 and implemented in reality with corresponding saving related to development of EUR/CZK exchange rate.

Review of expenditure on international cooperation and aid is shown in the following table.

Table. No. 1.7

(in "000" CZK, %)

Identification	Classification by elements of expenditure	Budget		Actual drawing	% of drawing	Expenditure structure
		Approved	Adjusted			
2191 516	Service purchase	1 011	886	882	99.55	2.8
2191 517	Other purchases	5 965	5 390	5 001	92.78	16.1
2191 519	Expenditure related to noninvestment purchases	20	357	344	96.36	1.1

2191 551	Noninvestment transfers to international and multinational organizations	7 400	25 400	24 535	96.59	79.1
2191 534	Transfers to own funds	0	0	270	-	-
2191	Total	14 396	32 033	31 032	96.88	100.0
6222 551	Noninvestment transfers to international and multinational organizations	0	2 900	2 900	100.00	-
6222	Total	0	2 900	2 900	100.00	-

Transfers of Budget Means to the Reserve Fund

Total of CZK 4,049 thousand was transferred to the Reserve Fund with SÚJB, of which the volume of expenditure in the amount of CZK 160 thousand relates to tasks of specific research and development for ongoing projects and CZK 269 thousand on opponent opinions. Remaining volume of CZK 2,120 thousand was secured by savings in drawings at the close of the year 2006 intended for the financial provision of SÚJB competencies not covered by the approved budget for 2007, including increased expenditure on international cooperation following the preparation of presidency of the Czech Republic in EU authorities.

Total review is indicated in the following table.

Table. No. 1. 8

(in "000" CZK, %)

Indicator	Reality 2006		
	Total	SÚJB	SÚRO
Initial state	15 991	11 040	4951
Total revenues	4 214	4 049	165
Transfers from budget accounts	4 049	4 049	0
Noninvestment grants from foreign countries	113	0	113
Noninvestment grants from international institutions	52	0	52
Total expenditure	1 405	443	962
Transfers to own budget accounts	1 405	443	962
Closing balance	18 800	14 646	4 154

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, participation in negotiation and national consideration of international treaties in the sphere of Office's authority and, last but not least, amendment to the selected SÚJB decrees.

SÚJB also participated in the preparation of other acts, which do not primarily come within its authority, but which impact directly the acts within its authority. Such regulation concerned, for example, the amendment to Act No. 133/2000 Coll., on registration of population and birth registration numbers, and on amendments of some acts (Act on Population Registration), which enabled SÚJB, by direct amendment to the Atomic Act, to obtain selected information

from the information system of population registration. This step is especially significant for purposes of performance of tasks related to monitoring and assessment of person exposure.

Another legislative task, in preparation of which SÚJB participated, was the fulfilment of government intention to reduce the administrative load of physical persons at proceedings and activities requiring the extract from the Penal Register for the purpose of irreproachability. Based on the result of the review of legal regulations in question, it was decided to draw up, in addition to the amendments of general acts governing problems related to the issue of the Penal Register as their main content, an amendment to special concerned legal regulations. Within the framework of this process, the SÚJB prepared the draft amendments of all three acts within its authority, i.e. Act No. 18/1997 Coll. (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 toxic weapons).

In the last year, the SÚJB, as in the previous period, participated in the process of reviewing the draft of legal regulations within the interdepartmental amendment procedures. In 2006, the SÚJB prepared approximately 220 viewpoints on legal regulations, on which the SÚJB, as the place for amendment procedure according to Legislative Rules, is obliged to comment.

A substantial part of the legislative activities of the SÚJB represents the creation of its own decrees. Further to Decree No. 309/2005 Coll., on assuring technical safety of selected nuclear facilities, the draft decree was prepared in the year 2006, which shall supersede current Decree No. 214/1997 Coll. on quality assurance in activities related to the utilization of nuclear energy and activities resulting in exposure, and on the establishment of criteria for assignment and categorisation of classified equipment into safety classes.

1.5.2. International Agreements, Treaties, Conventions

The SÚJB was engaged in the negotiations of four international treaties in 2006.

From the beginning of the year, the Office participated in the national ratification process of the modification of the Convention on Physical Protection of Nuclear Materials adopted by the contracting countries at the close of the diplomatic conference held in Vienna from July 4 to 8, 2005. The government expressed its assent to the modification of the Convention in its Decree No.108 of February 1, 2006 and submitted the text to both Houses of Parliament of the Czech Republic. The Senate expressed its assent to the ratification of the modification of the Convention, however, the Chamber of Deputies did not read the draft during its past life before its dissolution (the Foreign Committee of the Chamber of Deputies recommended only expressing assent to the modification of the Convention). Therefore, it is required to resubmit the draft to the Parliament.

The process of negotiation on modification of the Agreement between the Government of the Czechoslovak Socialist Republic and the Government of the Republic of Austria on Issues of Common Interest in the Field of Nuclear Safety and Radiation Protection (the so-called Information Agreement), laid down in the document “Conclusions of Melk Process and Follow-up” negotiated in December 2001 in Brussels, was terminated in the first half of the last year. The representatives of both parties initialed the final version of the text in the form of protocol on modification of the above mentioned Agreement in May. The Czech Government expressed subsequently its assent to this protocol in its Decree No. 609 of May 24, 2006. National process of protocol reading has not been yet terminated in Austria.

Over the last period, the SÚJB participated in the negotiation of the Agreement between the Organization for the Prohibition of Chemical Weapons (OPCW) and the Government of the

Czech Republic concerning the procurement of assistance based on paragraph 7 Article X of the Convention on the Prohibition on Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction.

Within the sphere of its authority, the SÚJB took steps necessary for national consideration of accession of the Czech Republic to an agreement between the European Atomic Energy Community (Euratom) and some its Member States and the International Atomic Energy Agency (IAEA) on implementation of Article III paras 1 and 4 of the Non-Proliferation Treaty (78/164/Euratom) and the Additional Protocol to this treaty (1999/188/Euratom).

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 the 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 (directives and guidelines).

In the year 2006, the directives related to introduction of new rules of administrative procedure into the Office activity were completed, which concerned amendments to directives on imposition of fines and on administrative charges. The directives on the appointment of authorized officials for administrative proceedings and for handling complaints according to the rules of administrative procedure were reissued. A new directive on the monitoring of radiation situation within the Radiation Monitoring Network - independent monitoring of effluents from nuclear power plants and their vicinities, directive governing the rules for performance of the Contact Point and operation of the Crisis Staff and the workplace of the crisis management were issued. In the field of administrative proceedings and information technology, the directive for the utilization of means of information and communication technologies, revision of records and shredding order, and new rules for administration and management of property within the SÚJB were issued.

1.5.4. Administrative Proceedings

In the year 2006, the SÚJB acted, for the first time, in accordance with the new rules of administrative procedure, which brought, with respect to more formal administrative proceeding according to this new legal form, an increase in issued administrative acts. The number of issued administrative actions is indicated in Table 1.9. The table includes only final actions in the matter, i.e. it does not completely reflect the increased administrative intensity of administrative proceedings, since the individual proceedings are different in subject complexity and amount of documents under consideration. The administrative actions taken by SÚJB cover wide scale of actions from licensing and authorizing, documentation approval to license cancellation.

Table 1.9. Number of issued administrative actions

	Nuclear safety	Radiation protection	Emergency preparedness	Non-proliferation of weapons of mass destruction
Number of administrative actions	162	2084	7	186

2. NUCLEAR SAFETY

2.1. Dukovany NPP

2.1.1. Assessment

Unit 2 of Dukovany NPP accomplished 20 years of operation in the year 2006. In connection therewith 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 (Final) Safety Report, Limits and Conditions of Safe Operation, Program of Operational Inspections and Monitoring Programs. Based on assessment of this documentation and results of inspections carried out, the SÚJB issued a permit in the first half of December for further operation of the unit for a term of ten years, i.e. until the year 2016. If conditions included in the permit are observed, Unit 2 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 in Unit 1 continued at Dukovany NPP. The recovered control system ran in parallel operation with the original systems and based on the assessment of the annual operation it will be transferred to normal operation in the year 2007. Preparation of the implementation of similar modernization continues also in the remaining units according to the schedule approved and controlled by SÚJB. In linkage to the above mentioned activities of NPP operator, the SÚJB paid increased attention to inspections of the operation of modernized I&C systems and after the completion of the approval process for new fuel type, the SÚJB issued the approval of its use.

During the year the operational event feedback system recorded, controlled and evaluated in total 43 significant events at Dukovany Nuclear Power Plant, of which 13 events were rated with the INES Level 0 according to the International Nuclear Event Scale, and one event rated INES Level 1. This event occurred in August, when short circuit occurred due to faulty manipulation in the Sokolnice switchyard followed by failure of eight transmission system lines, and the automatic systems transferred the units of the nuclear power plant to an island mode. One switchyard ensuring power supply of internal consumption for Unit 3 failed during this transition process and thus put out the automatic level control in steam generators, which ended in reactor shutdown to mode 3.

Neither automatic nor manual scram was initiated in the year 2006.

Table 2.1. Number of the assessed events and automatic scrams

	2001	2002	2003	2004	2005	2006
INES 0	17	12	13	12	19	13
INES 1	1	2	1	0	0	1
ROR	0	0	1	0	1	0

2.1.2. Inspection Activities

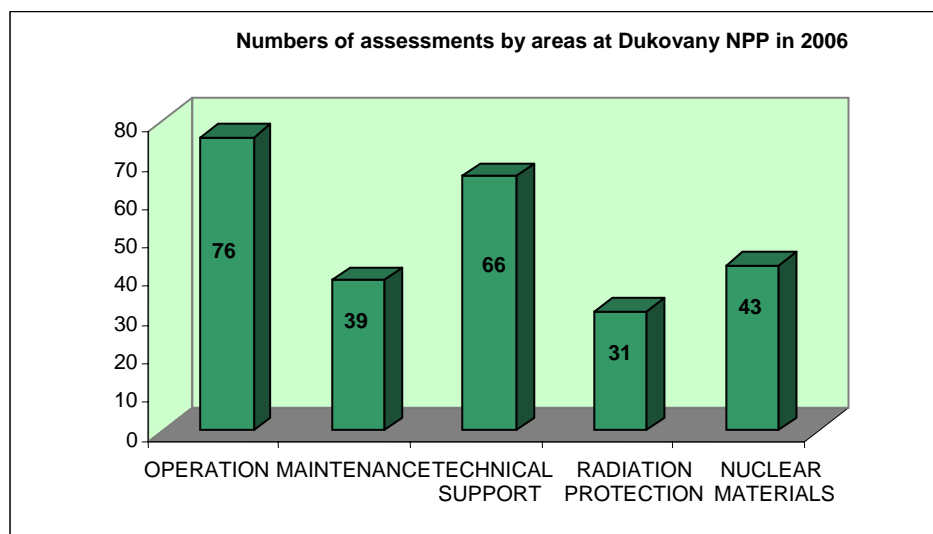
In the course of 2006, the SÚJB inspection activities at Dukovany NPP were documented in a total of 171 reports. The inspections were carried out as planned inspections on the basis of approved half-year plans of inspection activities, further as ad-hoc inspections on the basis of needs and findings found out during supervision activities, and as routine inspections carried out by site inspectors.

Nuclear safety during operation is primarily checked in the course of regular monthly inspections performed at individual units and in the course of regular refuelling outages, when preparedness for unit restart after refuelling is also checked. With the exception of the below mentioned case, there were no such deficiencies detected during these inspections, which would prevent the return of the unit into operation.

Damage done to cabling ready for connection for the modernized I&C system was detected in inspection carried out in the refuelling phase on Unit 1. This damage was caused by failure to observe the manufacturing technology of such cables. In this case, the licensee failed to ensure the function of the quality assurance system for the purpose of achieving the specified quality for the respective item, in this case cables. The administrative proceeding in this matter was initiated in January 2007. Non-conforming cabling was completely replaced and independent quality certificates for other cable types from the same manufacturer were produced.

In the course of the whole year, the SÚJB paid increased attention to the check of operation culture attributes, in particular to condition and cleanliness of equipment and operating areas. It was discovered that this state is repeatedly unsatisfactory and SÚJB requires the operator to take immediate measures resulting in remedy both in its organization and at the suppliers.

The following graph shows numbers of assessments carried out within the SÚJB inspection activities in given areas (one inspection may include assessment in more areas). A part of such assessments was 458 inspection findings, and SÚJB requested adoption of remedial measures for 46 findings thereof.



On the basis of results of the tests carried out in the presence of the State Examining Committee for Special Qualification Testing, 38 selected employees of Dukovany Nuclear Power Plant were awarded the license of activity at the nuclear facilities in the Czech Republic. Planned inspections focused on preparedness of shift personnel before start-up of all units after refuelling and found no deficiencies in personnel preparedness.

2.1.3. Final Assessment of Operation Safety

Notwithstanding the above mentioned findings, it may be stated on the basis of the continuous assessment of inspection results and safety indicators that the operation of all units of

Dukovany Nuclear Power Plant was on a good level; the units were operated reliably in accordance with the specified requirements. No events endangering nuclear safety or causing undue influences on the environment occurred. In the year 2007, the SÚJB will give increased attention to the field of safety culture and the effectiveness of remedial measures taken by the NPP operator for SÚJB findings.

For the assessment of the set of operation-safety indicators for 2006 for both NPPs and the summary of issued decisions see SÚJB website www.sujb.cz.

The collective dose equivalent for Dukovany NPP staff in the year 2006 amounted to 733 mSv; of which the NPP's skeleton staff received doses of 121 mSv and the supply companies staff 612 mSv.

2.2. Temelín NPP

2.2.1. Assessment

Due to necessary checks of fuel condition, refuelling outages and general overhauls were scheduled and performed with complete recovery of all fuel assemblies during the year. The prescribed inspections of the equipment and other activities were performed during the outages in accordance with the approved schedules of outages and equipment modifications, which resulted from previous experience with the operation of the units such as further modifications of turbine generators, modifications leading to reduction of steam line vibrations and partial adjustments of HW and SW in the control systems.

The refuelling outage performed at Unit 1 was completed in accordance with the planned schedule. After its completion, the unit was found operable, however, with output limitation up to 97% N_{nom} . The limitation was caused by steam line vibration, condition of fuel assemblies and limitation for turbine.

In order to implement the modifications on turbine, the emergency outage of Unit 2 was performed in January 2006. After its completion, the unit continued operating with reactor output limited to 97% N_{nom} to ensure continuous run of the turbine unit. The refuelling outage at Unit 2 was extended, in particular due to detected leakages of fuel elements and necessary subsequent activities and analyses resulting therefrom. Leaky fuel elements were removed and stored in a safe manner in the spent nuclear fuel storage pool. The checks confirmed leakage at three elements, when fuel – coolant contact occurred. On the basis of the results of the checks, analyses and taken and proposed measures, the operator produced the certificates of safety of further operation, including prediction of fuel condition development for next fuel cycle. In accordance with SÚJB request, it also submitted for approval new, more strict limits for monitoring the state of fuel leak tightness; such limits lower the values of summary primary coolant activity and conditions of the individual monitored radioisotopes determined to commence remedial activities. In its decision, SÚJB imposed an obligation on licensee in attainment of the values of activity of ^{134}I 5×10^5 Bq/l, or equivalent ^{131}I 2.29×10^6 Bq/l, or equivalent ^{131}I (spike) 6.86×10^7 Bq/l, or total specific activity 8.44×10^8 Bq/l to carry out an analysis and confirm the values of activity within 24 hours, transfer the unit to the MODE 4 within 48 hours from the confirmation of the results (with temperature in hot legs below 237 °C) and shut down the unit in accordance with the operating regulations. The SÚJB permitted further operation of Unit 2 only after these conditions were met.

Due to detected deformations of fuel assemblies described in the report for 2005, special periodic tests of reactor control elements (clusters) continued throughout the year 2006. The SÚJB was regularly notified by the operator on the results of tests being performed. Test results, except for last test performed during the past fuel cycle of Unit 1, showed sufficient

safety stock for next period. The condition fixing maximum drop time of one cluster was not met during the last (June) test and the operator, in accordance with the requirement of the Limits and Conditions, shut down the unit to premature refuelling outage.

Table 2.2. Overview of cluster drop tests in the year 2006 with specification of numbers of partially seated in drop damper

Date of test	25.2.	17.3.	7.5.	2.6.	4.8.	10.9.	14.10.	11.11.	9.12.
Unit 1	32	33	45	51	2	7	13	19	24
Date of test	4.1.	1.5.	8.7.	26.8.	8.11.				
Unit 2	0	0	1	6	0				

There was no unscheduled automatic reactor scram in the year 2006; only one reactor shutdown occurred due to automatic action of the limitation system after underprepared implementation of the repair on the turbine feedwater pump measuring system. Other reactor shutdowns by manual shutdown by the limitation system were scheduled within the tests of control elements. A total of 135 significant events were recorded in the operational event feedback system, of which the SÚJB rated 28 events with the INES Level 0 according to the International Nuclear Event Scale and four events were rated with INES Level 1.

The Limits and Conditions (LaP) were breached in the time of Unit 1 reactor shutdown for refuelling. The breakdown of the essential service water pump without automatic stand-by start was caused by supplier personnel error. After restarting the pump, it failed to reach the limiting levels in the balancing tank within one hour, and therefore, the required action laid down in LaP had not been fulfilled. After event analysis, the operator took measures to improve work assignment and workplace handover to the suppliers. The SÚJB verified the event within the periodic check of the feedback and rated it with INES Level 1. In accordance with the rules laid down by IAEA, the assessment rating 1 was used by reason of breach of LaP and human factor involvement (see above).

Another event on Unit 1 was rated with INES Level 1. When the primary circuit was filled up within the start-up after refuelling, the primary coolant leaked out to the containment through open vent valves of the pressurizer measuring system. Leakages were detected by the operating personnel; the valves were closed and the area decontaminated. Repeated incorrect operating procedures of the personnel and the suppliers with subsequent facility decontamination formed the basis of assessment.

In January 2006, the leakage of coolant from the steam generator primary manifold venting on Unit 2 was detected. The leakage was correctly signalled by the information system and confirmed subsequently on the basis of increased humidity in the containment and inlet to the primary circuit floor drainage. The leak of approximately 20 m³ of coolant was drained by specified system, which returns the coolant back after purification. No leakage to the environment outside the containment occurred and the event did not significantly affected the change of radiation situation in the containment. The rating with INES Level 1 was accepted by the SÚJB in view of the fact that repeated events of this type have occurred.

Fourth event rated with INES Level 1 involved the failure to observe the Limits and Conditions for allowable difference between the temperature of feedwater entering into steam generators and the metal of steam generator body (dT exceeding 120°C) when cooling down Unit 2 on transition to the scheduled outage. The parameters were exceeded due to failure to

observe the operating regulation on the part of the shift personnel. Required parameters recovered in the course of cooldown without any intervention of the personnel. Based on the event analysis, the operator took technical measures to improve operating personnel awareness of courses of the monitored parameters and verified by calculation that the event had a small effect on drawing of lifetime of the steam generators in question. The SÚJB verified the event within the periodic check of the feedback and rated it with INES Level 1, since it involved a common cause failure, when incorrect temperature sensing concerned all steam generators.

Table 2.3. Number of the assessed events and automatic scrams

	2001	2002	2003	2004	2005	2006
INES 0	10	26	36	41	43	28
INES 1	2	2	2	3	5	4
Automatic reactor scram	3	2	2	2	0	0

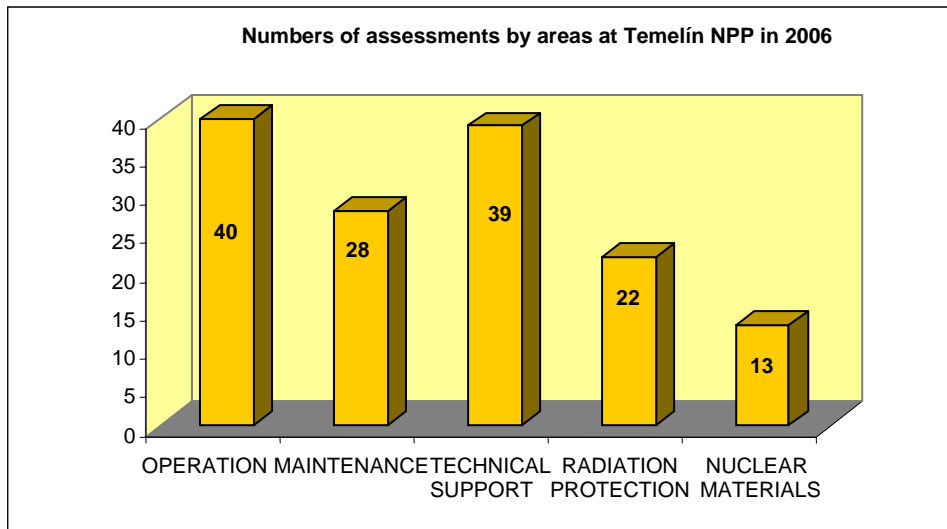
2.2.2. Inspection Activities

The results of the SÚJB inspection activity at Temelín Nuclear Power Plant were documented in 86 reports. 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. Nuclear safety during operation is primarily checked in the course of regular monthly inspections performed at individual units and in the course of regular refuelling outages, when preparedness for reactor restart is also checked. During the regular operation inspections, when SÚJB concentrated, in accordance with the results of the assessment of the inspection activity for 2005, on checking the indirect indicators of nuclear safety and operation culture related conditions, deficiencies in the documentation for test performance, in the documentation for providing nuclear safety related items as well as in the clean-up status were detected. It was found that several events were caused by operating, control and working documentation condition as well as inadequate maintenance. In linkage to such findings, the SÚJB took the first force act, i.e. sending of letter with requirements for remedy.

A specialized inspection verified the operator's procedure in solving the status of containment technological system and the course of work in replacing damaged prestressed cable detected during the check of its pre-loading. The SÚJB inspectors subsequently monitored the course of work in manufacturing a new prestressed cable. After completion, the new prestressed cable was installed and pre-stressed. The inspection team announced the results of inspections to the management and the operator was asked to take steps for revision of on-site procedures and implementation of measures to monitor and prove the condition of containment.

The implementation of modification aimed at removing of steam line vibrations in room A 820 on Unit 2 of Temelín NPP was checked at the close of the year. The modification consisted in changing the safety valve routing geometry. It was detected during this check that a part of work was not performed in accordance with SÚJB permission. During the erection, the project was operationally changed for space reasons, while SÚJB did not allow this change. After the completion of examination of all relations, and in spite of additionally produced certificates of safety of the deviation made, an administrative proceeding was instituted against the operator in January 2007.

The following graph shows numbers of assessments carried out within the inspection activities in given areas (one inspection may include assessment in more areas). A part of such assessments was 260 inspection findings, and SÚJB requested adoption of remedial measures for 56 findings thereof.



On the basis of completed tests carried out in the presence of the State Examining Committee, the SÚJB awarded the license of activity at the nuclear facilities in the Czech Republic to 40 selected employees of Temelín Nuclear Power Plant. Inspections in this area verified the fulfilment of requirements laid down in legislation for preparedness of shift personnel for the phase of reactor start-up after refuelling.

2.2.3. Final Assessment of Operation Safety

From the continuous assessment of the inspection results and safety indicators it may be stated, on the basis of assessment of direct indicators of nuclear safety related condition, that in spite of a number of events, the operation of both units of Temelín Nuclear Power Plant was safe and that the equipment failure rate was reduced. For the assessment of the set of operation-safety indicators for 2006 for both NPPs and the summary of issued decisions see SÚJB website www.sujb.cz.

The condition of nuclear fuel is continuously monitored on both units and measures for safe operation of both units are adopted. However, the assessment of the findings of the inspections focused on care of equipment and operation culture shows that the situation has not improved in this area. Therefore, the SÚJB proceeded to the modification of inspection system and method of enforcement of remedial measures consisting primarily in continuous monitoring in the form of specialized inspections.

The new NPP management adopted a number of measures in the last year aimed at further improvement of general operation reliability. For example, the organization has changed, when the department dealing with problems related to nuclear fuel was transferred to direct subordination of NPP Managing Director. There was a new department established at Temelín NPP, which deals with problems related to operational reliability. At the same time, fundamental reorganization of the system of supplier-consumer relationships was initiated in the year 2006, again with stress laid on quality and reliability.

Long-term unsolving of such problems could result in situations with direct impact on nuclear safety, therefore, SÚJB will continue to pay increased attention to these areas. The amended plan of SÚJB inspections for the year 2007 concentrates thus on monitoring of efficiency of measures taken by the NPP operator in the area of organizational and personnel changes, on problems related to operation culture, on amendments of on-site rules and operating regulations. A special stress will be laid on the above mentioned measures taken to improve the system of supplier relationships and changes in the NPP operation control system.

The collective dose equivalent for Temelín NPP staff amounted to 272 mSv; of which the NPP's skeleton staff received doses of 44 mSv and the supply company staff 228 mSv.

2.3. Research Nuclear Facilities

2.3.1. Assessment

The LVR 15 reactor at the Nuclear Research Institute in Řež was operated at power for 178 operating days in total. The planned operation inspections took place in July and in August after one year of its operation. The inspection results showed that the LVR-15 reactor equipment allows further safe operation. In the course of the year, the reactor was used for material testing (irradiation in experimental probes and loops) and for solving of tasks of basic and applied research. In the year 2006, there were eight non-scheduled reactor shutdowns, five of which were due to electric network failure, one due to operating personnel error and two non-scheduled shutdowns were caused by failure of DORA loading device. During such failures, neither the nuclear safety was reduced nor were persons or environment endangered.

SÚJB negotiations and approval process for scheduled transports of spent fuel from research reactors at the Nuclear Research Institute in Řež to Russia with the use of transport ŠKODA VPVR package continued. During the handling related to the preparation of the shipment, increase in neither collective dose nor average dose per employee occurred compared to the year 2005.

On the basis of the assessment of safety and guarantee documentation, the SÚJB granted the transport of selected nuclear materials to the Russian Federation. The transport was executed in linkage to the RRRFR (Russian Research Reactor Fuel Return) international project in December 2006.

The LR-0 reactor at the Nuclear Research Institute in Řež was operated for 612 hours in total (118 shifts); 330 hours were aimed at revisions and tests of the equipment, tests of Limits and Conditions and control equipment, and core alteration. The experiments on WWER-1000 core measurements continued and the work for implementation of the experimental zero-power reactor with SR-0 salt fuel was executed. The SÚJB reviewed and approved the updated versions of the Limits and Conditions and the Program of Operational Inspections of the LR-0 reactor.

The VR-1 reactor at the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague was operated for total of 1265 hours in the year 2006. The reactor was mainly used for teaching purposes for undergraduates and for research-development work. The SÚJB reviewed and approved the updated On-site Emergency Plan of the VR-1 teaching reactor and a new method of securing its physical protection. During the operation no failure affecting the nuclear safety or radiation protection occurred.

2.3.2. Inspection Activities

The SÚJB inspectors carried out 8 inspections at the workplace of the LVR-15 reactor (3 inspections of physical protection, 3 inspections of nuclear safety and 2 inspections of the fulfilment of the Limits and Conditions) and 4 joint guarantee inspections conducted by IAEA and SÚJB inspectors. The SÚJB inspectors carried out 3 inspections at the workplace of the LR-0 reactor. There were three inspections carried out at the workplace of the VR-1 reactor at the Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague, of which one was performed in the presence of IAEA and Euratom inspectors. Inspections carried out at all subjects revealed no serious deficiencies.

The State Examining Committee for verification of special qualification of selected personnel awarded 5 employees at the Nuclear Research Institute in Řež and 6 employees at the Faculty of Nuclear Science and Physical Engineering the license of activity at nuclear facilities.

In addition to the inspections mentioned, the inspections aimed at occupying the shifts with selected personnel with valid authorization were carried out at the workplaces of LVR-15, LR-0 and VR-1. Inspections carried out revealed no deficiencies in this area.

2.3.3. Final Assessment of Operation Safety

The nuclear safety of operation of the research nuclear facilities is on a stable good level. The facilities are operated in accordance with the approved documentation and they are modernized on a continuous basis, as required.

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 (Final) Safety Report in order to issue a license to continue operation of Unit 2 at Dukovany Nuclear Power Plant. Attention was primarily paid to chapters providing description of the results of safety analyses, which reflected changes caused by licensing of a new type of gadolinic fuel. The method and completeness of the fulfilment of requirements for the solution of safety aspects drawn up in the document "Safety Issues and their Ranking for WWER-440 Model 213 Nuclear Power Plants" issued by the International Atomic Energy Agency (IAEA) was assessed.

Based on the request to execute the Periodic Safety Review (PSR), the ČEZ, a.s. company drew up the respective methodologies for the Dukovany Nuclear Power Plant. The SÚJB assessed these methodologies and the comments were handed over to the NPP operator.

In the course of the year, the SÚJB assessed the draft revision of the Limits and Conditions for Safe Operation of Temelín Nuclear Power Plant. The subject of this new revision was incorporation of experience from past operation of the power plant and removal of deficiencies and parts enabling double interpretation. The revision was approved early in 2007. In linkage to the changes in nuclear fuel design and problems related to its operation, the operator submitted a request for approval of temporary modifications of some limiting conditions for both units. The SÚJB analysed the request from the viewpoint of possible

impact of modifications on nuclear safety and approved the modifications of LaP after assessment. The SÚJB determined more strict criteria for the field of LaP defining the limits of nuclear fuel leakage.

In connection with the current reconstruction of the I&C systems on Unit 1 at Dukovany NPP and introduction of a new nuclear fuel type, the changes of the relevant parts of the Limits and Conditions for Safe Operation of Dukovany Nuclear Power Plant were assessed and approved. It involved the changes of limits reflecting progressive replacement of individual parts of the I&C system. In the year 2006, immaterial alteration of the Limits and Conditions in the part related to information systems was specifically involved. The Pre-operational Safety Report for the operation of the Dukovany Spent Fuel Storage Facility assessed in the year 2006 is a significant assessed document. This report documents the compliance of the implemented site with the results of analyses and declared nuclear safety level of this nuclear facility. The assessment of the safety-related documentation for the type approval of the CASTOR 440/84M package used for storage purposes also related to the issue of a licence for trial operation of the Spent Fuel Storage Facility.

Probabilistic Safety Assessment (PSA)

The assessment of modifications of the Limits and Conditions documentation related to the Temelín Nuclear Power Plant on-line maintenance project and the assessment of the updated Living Summary Report of Dukovany NPP PSA were executed in the area of the probabilistic safety assessment. Assessment results showed no deficiencies.

The PSA group inspectors continued using the Risk Monitor in 2006 at both nuclear power plants. The Risk Monitor is used to monitor and control the course of the immediate risk of the operation in unit power and non-power conditions and to schedule repairs during unit outages. The values of immediate risk did not exceed the approved limits on any of the units at both power plants.

Research and International Projects

In 2006, the Czech workplaces solved projects as a support of state surveillance during safety assessment, results of which shall conduce to improving of the level and development of the methods for nuclear safety assessment of the operated nuclear power plants. The following projects were involved:

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

The project, solution of which continues in 2007, is to verify the occurrence of the "Warm Pre-Stressing" phenomenon with the material of the Czech reactor pressure vessels (at accidents with pressure-thermal shock), its impact on brittle fracture characteristics of materials used and incorporation of the impact of this phenomenon into the procedures for integrity assessment of reactor pressure vessels together with determination of real safety reserves of their 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, solution of which continues in 2007, 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 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.

Burnup Credit and Partial Boron Credit for nuclear fuel storage in storage pools at WWER reactors

The subject of the project, solution of which continues in 2007, is to give the SÚJB review and technical knowledge focused specifically on pools at WWER reactors related to the application of new, more effective storage technologies based on Burnup Credit (BUC) and/or Partial Boron Credit (PBC) included in the safety analyses of spent fuel system criticality.

Criteria for long-term operation of nuclear power plants

The project was completed in 2006. Within the scope of this project, a set of criteria was drawn up, fulfilment of which will be requested by the surveillance body in the case that the operator of the nuclear power plant applies for an extension of power plant operation beyond its design lifetime. The criteria shall be used to select the systems, structure and components, and demonstrate its safe extended operation.

Development of the SÚJB methodology for qualification criteria selection

The project was completed in 2006. A methodology was developed to identify interrelation of proposed NDT qualifications, degradation mechanisms and admissibility of possible defects occurred in piping systems of the nuclear power plants on the basis of risk-oriented access to operational inspections. The SÚJB will also use this methodology as a guide in identifying accesses to qualification on the basis of risk matrix according to the EPRI methodology.

Research and development of the possibilities of reducing risks and consequences of serious accidents of NPP in the Czech Republic on the basis of advanced experimental and analytical methods

The project was completed in 2006. The most recent development versions of advanced codes for the analyses of the course and consequences of serious accidents were acquired, implemented and verified. The national knowledge base on phenomenology of serious accidents was significantly improved by acquiring results of the PHEBUS program. Project results will be used in amending the legal regulations in this area.

2.6. Assuring Technical Safety of Classified Equipment

In 2005, the competencies in the area of the surveillance of safety of classified equipment (systems, structures and components) in nuclear energy were transferred from the Ministry of Labour and Social Affairs to the SÚJB and new legal regulations were adopted (Act No. 253/2005 Coll. amending some acts in connection with the enactment of Act on Work Inspection, and Decree No. 309/2005 Coll. on assuring technical safety of selected facilities).

With respect to the performance of surveillance of technical safety, when observing the requirements of Decree No. 309/2005 Coll., the SÚJB laid down rules discussed with the licensees and with the manufacturers of specifically designed classified components on a continuous basis.

In evaluating requests of inspection organizations for the grant of the authorization (under Act No. 22/1997 Coll.) to perform activities in assessing compliance of classified equipment specifically designed for nuclear facilities, the SÚJB cooperated with the Czech Office for

Standards, Metrology and Testing (ÚNMZ), assessed submitted documentation and discussed its opinions and recommendations with the Czech Office for Standards, Metrology and Testing (ÚNMZ). At the close of 2005, the ÚNMZ granted the authorization to the TÜV NORD plc. and ITI Praha companies; in 2006, the TÜV CZ plc. and SZÚ s.p. companies were granted the authorization.

In 2006, regular daily inspection activity was commenced in the area of technical safety of the operation of both nuclear power plants and specialized inspection activity aimed at observing the requirements, procedures and work system of authorized persons.

The SÚJB inspections verified the technical safety of classified equipment at their construction and operation. No serious deficiencies were detected in this area.

Past knowledge obtained by SÚJB inspection performed at authorized persons shows that their activity in assessing compliance in terms of requirements imposed on technical safety is on acceptable level.

3. SPENT NUCLEAR FUEL AND RADIOACTIVE WASTE MANAGEMENT, AND DECOMMISSIONING

3.1. Radioactive Waste Generation and Management

3.1.1. Treatment and Transport of Radioactive Waste

A total of 280 m³ of liquid radioactive concentrate and 63.2 t of solid radioactive waste were generated at Dukovany Nuclear Power Plant. A total of 672 m³ of liquid concentrate was bituminised to the form suitable for disposal and a total of 37.3 t of solid radioactive waste was treated. A total of 208 m³ of liquid radioactive concentrate and 26.1 t of solid radioactive waste were generated at Temelín Nuclear Power Plant. A total of 179 m³ of liquid concentrate was bituminised to the form suitable for disposal and a total of 15.8 t of solid radioactive waste was treated. Fifteen transports of treated radioactive waste from Temelín Nuclear Power Plant to the Radioactive Waste Repository (ÚRAO) in Dukovany were carried out in the year 2006. A total of 68.99 m³ of solid radioactive waste was produced at the Nuclear Research Institute Řež, a.s., but no liquid radioactive concentrate. A total of 0.5 m³ of liquid concentrate (from concentrate acquired in the year 2005) and 53.0 m³ of solid radioactive waste were cemented to the form suitable for disposal at the Richard and Bratrství Radioactive Waste Repositories (ÚRAO). The ISOTREND, s. r. o. company produced a total of 0.1 m³ of solid radioactive waste.

3.1.2. Storage and Disposal of Radioactive Waste

Most of the radioactive waste generated at nuclear power plants is disposed at the Radioactive Waste Repository (ÚRAO) in Dukovany. In 2006, a total of 194.8 m³ of radioactive waste from Dukovany Nuclear Power Plant, 88.0 m³ of radioactive waste from Temelín Nuclear Power Plant and 7.7 m³ of institutional radioactive waste were disposed in this repository. All disposed wastes fulfil the waste acceptance criteria approved by the SÚJB. Monitoring of repository confirms its safe function.

In 2006, a total of 44.4 m³ of radioactive waste was disposed at the Richard repository near Litoměřice and 3 m³ of radioactive waste was received for storage. Thirteen units of stored sealed radionuclide sources were handed over for reprocessing. All disposed wastes fulfil the waste acceptance criteria and the Operational Limits and Conditions approved by the SÚJB. Monitoring of repository confirms its safe function.

Radioactive waste containing natural radionuclides is disposed at the Bratrství Radioactive Waste Repository near Jáchymov. A total of 19.2 m³ was disposed in this repository in the year 2006. All disposed wastes fulfil the waste acceptance criteria approved by the SÚJB. Monitoring of the repository confirms its safe function.

3.1.3. Spent Fuel Storage Facilities

Interim Spent Fuel Storage Facility at Dukovany

The Interim Spent Fuel Storage Facility (MSVP) at Dukovany is used for the long-term storage of spent nuclear fuel (VJP) from the WWER-440 type reactors operated on the premises of Dukovany NPP. The last CASTOR 440/84 transport and storage cask was delivered to the interim storage facility in March and its design capacity was thus filled. The interim storage facility houses, on a long-term basis, 60 the CASTOR 440/84 transport and storage casks accommodating 5,040 fuel assemblies, which amounts to 600 tons of heavy metal. The SÚJB assessed and approved the amendment of the Operational Limits and Conditions for the Interim Spent Fuel Storage Facility. This amendment involved immaterial alterations of this document made in linkage to the termination of the original document (e.g. the change of the organizational structure of the ČEZ, a.s. company was taken into consideration).

The operation of this nuclear facility, in the assessed period, was safe without any event affecting its nuclear safety.

Spent Fuel Storage Facility at Dukovany

The construction of the Spent Fuel Storage Facility (SVP) at Dukovany was completed in February 2006 by final building approval of the respective building office. The operator asked the SÚJB to issue the commissioning licence in April. After affirmative assessment of the presented safety-related documentation required by the Atomic Act and on the basis of results of the inspection activity, the SÚJB issued the commissioning licence in November. The first transport and storage cask containing the spent fuel was placed in the storage facility in December. The storage facility is designed for storage of spent nuclear fuel from Dukovany Nuclear Power Plant and its capacity amounts to 133 pieces of the CASTOR 440/84M transport and storage casks, which amounts to 1,340 tons of heavy metal.

Spent Fuel Storage Facility at Temelín

The SÚJB licence for sitting of the nuclear installation – the Spent Fuel Storage Facility on the premises of Temelín NPP was issued in the year 2005. Neither administrative proceedings nor other activities involving SÚJB took place in the course of the year 2006.

High-Level Waste Storage Facility at the Nuclear Research Institute in Řež

The High-Level Waste Storage Facility (VAO) 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 research reactors. The construction of the hot cell on the premises of the High-Level Waste Storage Facility was completed in the course of the year and its operation was commenced. The hot cell is used for repackaging of 190 storage units containing EK-10 spent fuel into sealed capsules and preparation for transport of spent fuel to the Russian Federation within the RRRFR (Russian Research Reactor Fuel Return) international project (see item 2.3.1).

The High-Level Waste Storage Facility housed 240 IRT-M fuel assemblies and 16 EK-10 fuel assemblies in a wet way on December 31, 2006. In a dry way, the storage facility houses 190 storage units containing the EK-10 spent fuel.

3.1.4. Institutional Waste

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 a permit to manage radioactive waste. The holders of the relevant permits include the Nuclear Research Institute Řež, a. s., ÚJP Praha, a. s., Zam-servis, s. r. o., ISOTREND, s. r. o., and VF, a. s. The Nuclear Research Institute Řež, a.s. took 18.85 m³ of liquid radioactive waste and 30.88 m³ of solid radioactive waste from external originators., It handed over 43.6 m³ of radioactive waste to the Richard Radioactive Waste Repository and 6.4 m³ of radioactive waste to the Bratrství Radioactive Waste Repository for disposal. The Zam-servis, s. r. o. company took 0.8 m³ of solid radioactive waste from external originators, and handed it over to the Richard Radioactive Waste Repository for disposal. The ÚJP Praha, a. s. company handed over 12.8 m³ of radioactive waste to the Bratrství Radioactive Waste Repository for disposal. The SÚJB continuously checked the fulfilment of the requirements on safe processing and treatment of radioactive waste before its disposal. Based on the results of the checks, the SÚJB stated that the holders of the licence for the management of radioactive waste satisfy the Limits and Conditions for safe management and the radioactive waste handed over for disposal fulfils the waste acceptance criteria approved by the SÚJB. The radioactive waste handed over for storage meets the Limits and Conditions for storage.

The Radioactive Waste Repository Authority (SÚRAO) licence for the management of radioactive waste was extended by radioactive waste treatment. The SÚJB granted a permit to manage radioactive waste to the VF, a. s. company in the extent of radioactive waste sorting, collection, processing, storage and treatment.

The SÚJB monitors and controls the record-keeping of open radiation sources at the licensees, who are obliged to register the changes of amount therein, i.e. from taking the radiation sources to their hand over for safe disposal. With respect to physical properties of radionuclides, the movement of open radiation sources is not monitored in the central register of sources. The amount of taken open radionuclide sources and the amount of disposed ones cannot be compared due to the complexity of this issue (physical, chemical and physico-chemical properties of radionuclide sources). The movement of sealed radiation sources is monitored by means of the register of ionizing radiation sources administered by SÚJB.

3.1.5. Decommissioning

The SÚJB assessed no proposal for decommissioning of any nuclear facility in the year 2006.

3.2. Final Assessment

The SÚJB inspectors carried out a total of 18 inspections of the management of radioactive waste and spent nuclear fuel in nuclear facilities in the year 2006. Based on the results of such inspections it may be stated, except for one case, that the licensees manage the radioactive waste in conformity with the requirements of the legal regulations and the Limits and Conditions for safe management of radioactive waste approved by the SÚJB. In one case, when it was detected that the reconstruction work in chambers at the Richard Radioactive Waste Repository was carried out without the SÚJB permit, the inspectors initiated an administrative proceeding and the operator of the repository (SÚRAO) was levied a fine for breach of Act No. 18/1997 Coll.

The storage of spent fuel is in conformity with the requirements of the legal regulations in force and the Operational Limits and Conditions of all storage facilities approved by the

SÚJB. All transport and storage casks used for the storage of spent fuel are type-approved by the SÚJB.

In 2006, the remediation of past environmental burdens continued at the Nuclear Research Institute Řež a.s. The SÚJB monitors the progress of work on individual items of the Implementation Project on a long-term basis. All activities performed during improvement works, i.e. management of ionizing radiation sources, radioactive waste and spent fuel, were carried out in conformity with the requirements of radiation protection and nuclear safety.

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

4.1. Transports of Nuclear Materials and Radioactive Substances

A total of 40 transports of nuclear materials or radioactive substances were carried out in the year 2006 on the basis of the licences issued by SÚJB. Six transports of the total number concerned combined air and road international transports of fresh fuel from the Russian Federation to Dukovany NPP; two transports were combined sea and railway international transports of fresh fuel from the USA to Temelín NPP and one transport was combined road and air international transport of nuclear materials from the Nuclear Research Institute Řež, a. s., to the Russian Federation. Furthermore, seven international transports of uranium concentrate from the DIAMO, s. p. plants abroad were performed. Three international transports of high-activity radioactive substances from abroad to the Czech Republic were performed (Belarus – ÚJP Praha, a. s., Russia – ÚJP Praha, a. s., and Hungary – BIIOS, a. s., Veverská Bytíška). Nuclear materials from ŠKODA JS, a. s., to the Nuclear Research Institute Řež, a. s. were transported on an inland basis. In addition, seven inland transports of natural uranium oxides from the ÚJP Praha, a.s. to glass-works were performed. Three internal transports of fresh and spent fuel were carried out at Dukovany Nuclear Power Plant, two at Temelín Nuclear Power Plant and eight at the Nuclear Research Institute Řež a. s. In the monitored period, there also proceeded one international road transport of surveillance samples, i.e. from Mochovce Nuclear Power Plant (Slovenské elektrárne, a. s., Slovak Republic) to the Nuclear Research Institute Řež. a. s., and fifteen transports of radioactive waste between Temelín NPP and Dukovany NPP.

The SÚJB carried out a total of 10 inspections of the transports of nuclear materials and radioactive substances, which included seven inspections of international transports of nuclear materials and three inspections of internal transports. On the basis of results of the 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. were fulfilled as well as the conditions of relevant decisions issued by the SÚJB. In compliance with the relevant legal regulations, the Police of the Czech Republic participated in ensuring the nuclear protection and securing the routes in the transport of nuclear materials.

4.2. Physical Protection of Nuclear Facilities

All nuclear facilities and organizations managing classified nuclear materials have an approved method of physical protection assurance in accordance with the relevant requirements of Czech legislation. In the year 2006, the licensees started to implement requirements of Decree No. 500/2005 Coll.

Due to termination of the permit, the method of assuring the physical protection was reapproved for all nuclear facilities with nuclear reactors and for Spent Fuel Storage Facility at Dukovany. In connection with the modernization of the physical protection system, a permit was granted for reconstructing the EZS (electronic safety system) at the workplace of VR-1 reactor, and on Dukovany NPP, the replacement of identification card scanners by Contactless Integrated Circuit Card (CICC) was permitted as the first step in the process of the preparation for introduction of biometrical detection of entering persons which should be established in 2007.

A total of 13 scheduled and 1 unscheduled inspections, focused on the field of physical protection assurance on nuclear facilities, and 6 inspections of physical protection assurance of transports of nuclear materials were carried out in the course of 2006. The inspection results verified that the inspected persons fulfil the requirements of the relevant legal regulations and the conditions of decisions issued in this field; the operators of the nuclear facilities pay necessary attention to the physical protection assurance and the technical facilities are gradually updated.

Based on ENSRA (European Nuclear Security Regulators Association) invitation, the Czech Republic became a regular member at its session hold in Paris in November 2006.

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 types of workplaces with ionizing radiation sources;
- Monitoring, assessment and control of personal exposure including exposure to radon and other natural ionizing radiation sources and exposure in emergency situations;
- Keeping countrywide records of ionizing radiation sources and countrywide records of professional exposures.

5.1. Ionizing Radiation Sources and Respective Associated Workplaces

Pursuant to Act No. 18/1997 Coll., as amended, workplaces with ionizing radiation sources (IZ) are divided into four categories, 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

In 2006, the SÚJB recorded the following workplaces of category IV and the most important workplaces of category III:

- Workplaces with nuclear reactors and associated process equipment, i.e. 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, Spent Nuclear Fuel Storage Facility and the Radioactive Waste Repository on the premises of Dukovany Nuclear Power Plant, the Radioactive Waste Repository in Richard mine near Litoměřice and in Bratrství mine 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 Rožinka, mine liquidation in the Příbram area and the closed Hamr mine, liquidation of chemical mining in the Stráž pod Ralskem area, and liquidation of Mydlovary decantating plant;
- Workplaces with large industrial irradiators – i.e. the Artim Praha, s.r.o. company workplace for the irradiation of food (particularly spices) and the workplace for radiation sterilization of medical stores of the Biostér Veverská Bytíška, a.s. company;
- Workplaces producing, or using both high-activity unsealed and high-activity sealed radioactive sources of the companies Eckert & Ziegler Cesio, s.r.o., Sorad, s.r.o., Isotrend, s.r.o., the Czech Metrology Institute, the Nuclear Research Institute Řež, a.s., the Nuclear Physics Institute of the Academy of Science of the Czech Republic Řež, the National Institute for Nuclear, Chemical and Biological Protection Kamenná-Milín and the workplaces of the VF, a.s., Černá Hora company.

Unsealed radiation sources are usually of a chemical 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. A total of 18 workplaces with unsealed radiation sources of category III and 78 workplaces with unsealed radiation sources of category II were registered on December 31, 2006 at 12 and 51 holders of the permit respectively.

Sealed radiation sources (URZ) have piece character; except for calibrating sources they are not applied directly, but are fitted into devices (e.g. crack detection or logging units, meters). Therefore, the number of particular sealed radiation sources does not have to be identical to the number of equipment containing these radiation sources. A number of sealed radiation sources is stored on a long-term basis or intended for disposal. A total of 6,521 sealed radiation sources (independent or installed in the facilities) were registered as of December 31, 2006; of which 3,225 are actively used, 983 are stored in the working storage facilities and other 2,263 radiation sources were stored before their disposal. Numbers of actively used equipment with sealed radiation sources, which are classified as significant or simple sources of ionizing radiation, registered as of December 31, 2006 are outlined in Table No. 5.1.

Table No. 5.1 Actively used devices containing sealed radioactive sources

Field	Devices with sealed radioactive sources in the category “significant ionizing radiation sources”	Devices with sealed radioactive sources in the category “simple ionizing radiation sources”
National health sector	63	8
Industry and other applications	327	817
Total	390	825

A separate category of sealed radiation sources, the so-called high-activity sources, is registered from January 1, 2006 in accordance with Decree No. 499/2005 Coll. A total of 2,273 pieces of these radiation sources was registered in the Countrywide Registry of Ionizing Radiation Sources on December 31, 2006. Of this number, only 684 radiation sources are actively used. A total of 1,335 pieces is currently stored in a safe manner on a long-term basis

before their disposal. This involves particularly radiation sources whose activity at the intermediate time dropped by natural radioactive decay so much that they are not suitable for original purpose. The SÚJB tries to assure that the sources not used on a long-term basis are disposed as soon as possible.

Table No. 5.2 indicates the number of radiation generators. The radiation generators are 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.

Table No. 5.2 Number of radiation generators

Field	Significant sources	Simple sources
National health sector	2575	4873
Veterinary applications	216	274
Industry	5	279
Other applications	21	139
Total	2817	5565

Pursuant to Act No. 18/1997 Coll., as amended, the use of the minor sources does not require any permit, however their reporting by the operator to the State Office for Nuclear Safety is necessary (e.g. fire detectors). By estimation, a total of 160,000 of these sources are used, as in previous years. Insignificant sources are not subject to the reporting duty, because the nature of these sources is not hazardous to health and environment; therefore, these sources are not a required subject of state records.

5.1.2. Emergency Cases

In 2006, the inspection conducted by the SÚJB reported and investigated 82 emergency cases related to ionizing radiation source management or activities resulting in exposure. The following cases were involved:

- 23 captures of vehicles (railway wagons and cars) transporting iron scrap; the vehicles were captured by measuring equipment at the entries into metallurgical works and to scrap yards. In 9 cases materials contaminated with natural radionuclides (in particular ^{226}Ra) were involved; 4 cases involved the capture of material contaminated with artificial radionuclide (^{60}Co); in 3 cases the working cover of the ionizing radiation sources was found after determination of the location (in 2 cases without radiation source and in 1 case containing ^{137}Cs) and in 7 cases the contaminated material was returned outward without determination of the location;
- 12 captures of collective wagons with municipal waste at the entry into waste incineration plants, wherein 6 cases of contaminated medical stores (^{131}I , ^{57}Co) were isolated and 6 cases in which objects (gloves, dial, wire, etc.) or materials (ore) containing natural radionuclides (^{226}Ra , natural uranium) were isolated;
- In 8 cases the detection of an object was reported with the suspicion that it involved an ionizing radiation source; this involved detection of 7 pieces of ionizing fire detectors at the scrap yard; detection of container (hydrometer) without radiation source; detection of minerals showing increased radioactivity; detection of 3 covers, where the radiation source (^{60}Co) was identified in one of them; detection of lost GAMMAMAT type crack detection source; detection of analyser (that was handed over for disposal to unauthorized person) and two cases involved detection of illegal chemical storage facility, where substances showing increased radioactivity were detected;

- 2 (or 3) cases related to the metal working processes, where 1 case concerned melting contamination with formerly contaminated steel and in 1 case the contamination of metal chips intended for metallurgical processing was detected; another contaminated chip was detected at the subsequent investigation at the suppliers and melting contamination (recorded as separate case);
- 2 cases, when unjustified exposure to patient at the radiotherapy workplace occurred;
- 1 case, when water overflowed from a receiver bellow dump due to snow melt;
- 2 cases, when the area at the nuclear medicine workplace was contaminated due to mishandling of sanitary instruments;
- 31 cases occurred on the premises of Dukovany NPP and Temelín NPP not classified as emergency events in legal sense, however, they related to the observance of the requirements of radiation protection. This number included 21 cases related to the contamination of the working areas caused by equipment defect or operating personnel mishandling. Other cases concerned primarily excess of reference levels determined in the monitoring programs, including subsequent reconsideration, finding of cause and its removal. One case (Dukovany NPP) involved breach of the radiation protection principles, when a contaminated employee of a supplier organization was leaving the controlled zone. This case was closed by imposing sanctions on the employee and by amending power plant documentation. Two cases related to the occurrence of active particles within the working areas and their disposal in accordance with the operating regulations.

None of the above mentioned cases involved excess of annual limits for human exposure or authorized limits of effluents to the environment and no cases of uncontrolled escapes of radioactive substances to the environment were recorded.

Emergency cases were handled in accordance with the respective on-site regulations and in conformity with the SÚJB instructions. 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

In addition to regulation of the utilization of artificial ionizing radiation sources, the inspection activity has been 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

The SÚJB registers currently over 6,500 legal entities in the Czech Republic, who are the holders of the permit to manage ionizing radiation sources or to operate workplaces of category III or IV. The overwhelming majority of them are engaged in the field of health services.

The SÚJB issued 2,084 decisions in the field of radiation protection in 2006, i.e. comparable number as in the year 2005. It may be expected that considerably more applications for a permit will be submitted in the year 2007, because most of the permits issued before the force of Act No. 13/2002 Coll. will expire. In 2006, no permit was revoked for breach of the obligations requested by law.

In relation to provisions of Section 6 of Act No. 18/1997 Coll., the SÚJB issued a total of 25 opinions in the year 2006. 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, 53 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 2006, 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 Centres of the State Office for Nuclear Safety) or on the basis of specialized inspection scope (inspections conducted by Specialized Inspection Teams - SIS). This system, which was verified in past years as very effective, is supplemented with *ad hoc* inspections by formed inspection teams, particularly for time-consuming and material-intensive inspections at the workplaces of category III and IV.

The four-degree system is used to classify the inspection results. The result of the inspection, during which no or small defects were detected, is rated with Degree 1; results of the inspections, during which defects impeding safe performance of activities resulting in exposure were detected, are rated with Degree 3 and some activities resulting in exposure must usually be limited or suspended until remedial measures are taken. Situations where the inspection was not or could not be evaluated for some reason, are rated with Degree N.

In the field of radiation protection, a total of 1,199 inspections were carried out in the year 2006, majority of which was executed at the holders of the permit to manage simple and significant sources. A total of 81 inspections were conducted by SIS, which related to the field of natural ionizing radiation sources, radiotherapy, nuclear medicine and open radiation sources.

A total of 55 inspections were carried out in the field of nuclear power, of which 10 inspections proceeded at suppliers. At both NPPs, main attention was given to observance of radiation protection mode measures, to reconsideration of events in the course of the year and to adherence to radiation protection principles at supplier entities. The result of the inspection, during which the contamination of an employee of the ČEZ ENERGOSERVIS, s.r.o. company was investigated at Dukovany NPP, was rated with Degree 3. The contamination related to gross violation of rules when leaving the controlled zone. After event investigation, the adoption of a measure preventing repetition was imposed on the supplier.

There were 59 inspections performed in the field of uranium and other mining activities and old loads that were mainly focused on observance of radiation protection mode measures at workplaces, on adherence to conditions for mine water release from former works into the environment, on adherence to monitoring programs and check of radionuclide content at dumping aggregate manufacturer. No inspection result was rated with Degree 3, and deficiencies detected in 15 cases of inspections were rated with Degree 2. Such deficiencies were removed within the time set by SÚJB.

In the field of natural ionizing radiation sources, there were 164 inspections carried out in the year 2006 at suppliers of water intended for public drinking-water supply, at manufacturers and suppliers of building materials and packed water, and at operators of workplaces, where significant increase of exposure from natural sources may occur, and 18 inspections at holders of the permit to provide services in the field of natural ionizing radiation sources. The inspection activity at these entities was carried out according to priorities determined in the previous period and focused especially on excesses of reference and limit values. In the

course of the year, the situation at workplaces with possible occurrence of significant increase in exposure from natural sources was gradually improving. The number of inspection results rated with Degree 1 continued to increase. Results of the inspection carried out at manufacturers and importers of building materials are more favourable compared to the year 2005. In 2006, maximum portion of findings rated with Degree 2 or 3 was again recorded at water suppliers. New problems related to the excess of reference and limit values of radon activity concentration in supplied water occurred due to nonfunctionality of old radon control equipment. Total number of inspections carried out included 66 cases where no significant deficiencies were detected and the inspection was rated with Degree 1; on the basis of results of the inspections, a decision on imposition of remedial measures was issued in 8 cases (for 7 water suppliers, 1 building material manufacturer).

The inspections at the holders of the permit to provide services in the field of natural ionizing radiation sources are carried out on a regular basis. As in the last year, the inspection results rated with Degree 2 prevail, and two findings were rated with Degree 3. There are deficiencies detected on repeated occasions in the adherence to the approved guidelines and in the quality of measuring protocols.

Three inspections were carried out at the holders of the permit for special training of selected personnel, where all of them were rated with Degree 1.

In 2006, inspections focused on fulfilment of provisions of the approved on-site emergency plan - the traumatology plan section - at Dukovany Nuclear Power Plant and the Nuclear Research Institute in Řež were also carried out.

Total number of inspections carried out in the field of radiation protection slightly decreased as compared with the same period of the year 2005 (1,260 inspections in total), which is mainly caused by long-term trend in focus of inspection activity on more exacting inspections of workplaces, which are "more important" in terms of radiation protection.

Table No. 5.3 Assessment results of inspections in the field of radiation protection in 2006

	Degree 1	Degree 2	Degree 3	Degree N	Total
Artificial sources	558	406	35	10	1009
Natural sources	70	97	20	3	190
Total	628	503	55	13	1199

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, failure to remove the deficiencies detected at the previous inspection within the prescribed time, failure to follow the procedures according to the approved documentation, failure to ensure steady surveillance of radiation protection provided by person with direct responsibility for radiation protection in case of medical exposure, failure to perform long-term stability tests within required time or assessment of source properties (long-term stability tests) conducted by personnel without valid authorization of special professional qualification.

In a total of 13 cases, the inspection could not be executed (Degree N) by reason of termination of or failure to perform activities subject to inspection or long-term illness of inspected person.

In summary it may be stated that the level of radiation protection requirement assurance in the year 2006 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.

5.2.3. Remediation of Environmental Burdens from the Past

In 2006, the remediation of environmental burdens occurred before privatization of the institute continued at the Nuclear Research Institute Řež a.s. The SÚJB continuously monitors the progress of work on individual items of the Implementation Project, both by participation of its representatives in meeting of inspection days (conducted in the presence of the representatives of the central state administration bodies, especially Ministry of Environment and Ministry of Finance) and by internal specific inspections. All activities performed, i.e. handling of ionizing radiation sources, radioactive waste and spent nuclear fuel, were carried out in conformity with the requirements of radiation protection and nuclear safety regulations.

Another field where old environmental burdens occur, is uranium ore mining and treatment. By the entry of the Atomic Act into force, uranium ore mining and treatment represent radiation activity, which is subject to all provisions of this act and is thus performed under SÚJB permit granted pursuant to Section 9 of Act No. 18/1997 Coll.

By the request of the DIAMO, s.p. company, the permit of decommissioning of the decanting basin of phase II of Chemical Mining at Stráž pod Ralskem was revoked by SÚJB decision ref. no. 44143/2006 of August 24, 2006. The request was made due to the change in technologies using for remediation of consequences of underground chemical leaching. By the request of the DIAMO, s.p. company, on the same date a permit to operate workplaces on the premises of the decanting basin as the the workplace of category III was issued.

Remediation of consequences of underground chemical leaching itself is executed on the basis of the permit to operate the workplace of category III of the Chemical Mining and the Monitoring and Logging Center and the permit to operate the workplace of category III of the Acid Solution Control Station granted on June 30, 2003.

According to SÚJB permits of December 11, 2002, and newly of November 24, 2006, decommissioning of a workplaces of category III and of decanting fields is in progress in the former MAPE Mydlovary Uranium Ore Chemical Treatment Plant Mine water treatment plants working at flooded uranium ore mine Příbram is clasified, according to SÚJB permit, as a workplace of category III - Mine Water Treatment Plant Příbram II, and e Water Decontamination Station No.11-Bytíz as a workplace with very significant source. A permit for the introduction of radionuclides into the environment is granted for discharge waters.

Analogous permit was issued for Mine water treatment plant Zadní Chodov working at flooded uranium ore mine Zadní Chodov. A permit for the introduction of radionuclides into the environment is granted for discharge waters as well.

The above mentioned old environmental burdens are administered by the companies DIAMO, s.p., SUL, o.z., Příbram and the introduction of radionuclides into the environment is controlled according to the Program of Monitoring of Radiation Protection Related Quantities, Parameters and Matters approved by SÚJB decision.

The observance of provisions of the Atomic Act and requirements of issued decisions was continuously checked in the year 2006 when supervision of radiation protection was performed within the framework of the above mentioned inspections.

5.3. Exposure Control

Great attention has been, for many years, given to keeping personnel and population radiation exposure on an 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 2006 was monitored by eight 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 National Institute for Nuclear, Chemical and Biological Protection that assures personnel monitoring in the uranium-mining industry (Diamo, s.p.), and further the National Radiation Protection Institute and the Nuclear Research Institute Řež, a.s., which provide specific services of personal dosimetry (personal doses from internal contamination). A license was also granted to the ECOINVEST and the Health Resort of Jáchymov. These organizations monitor the personal doses for internal needs, and the Nuclear Physics Institute of the Academy of Science of the Czech Republic, which evaluates the doses for aviation personnel. In 2006, the SÚJB organized comparison measurements, and dosimetric services of Dukovany NPP, Temelín NPP and the National Institute for Nuclear, Chemical and Biological Protection participated therein. A total of 19,680 employees with ionizing radiation sources were monitored by dosimetric services. The doses of these employees are recorded in the Central Registry of Occupational Exposure (CRPO) kept by the SÚJB. The preliminary evaluation of doses shows the following:

A total of 1,809 employees were monitored in 2006 at Dukovany NPP using dosimeters (of this number 533 employees were the skeleton personnel of Dukovany NPP and 1,276 - supplier employees); the cumulative collective effective dose was 733 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 8.65 mSv (detected within an employee of a supplier organization).

A total of 1,481 employees were monitored in 2006 at Temelín NPP using dosimeters (of this number 468 employees were the skeleton personnel of Temelín NPP and 1,013 supplier employees); the cumulative collective effective dose was 272 mSv (including all doses exceeding 0.05 mSv); the average personal effective dose was 0.28 mSv and the highest annual individual effective dose was 7.96 mSv (detected within an employee of a supplier organization).

In the uranium-mining industry, a total of 410 employees were monitored at the underground workplaces of GEAM Dolní Rožínka. The cumulative collective effective dose was 3.2 Sv; the average individual effective dose was 7.8 mSv. The highest individual effective dose in 2006 was 33.4 mSv (underground); a total of 505 employees in the uranium-mining industry were monitored with a cumulative collective dose of 3.5 Sv.

In other industrial applications, about 2,400 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 (1.3 mSv) and logging works (1.5 mSv).

At medical workplaces with ionizing radiation sources, doses were evaluated for almost 13,000 employees. Of this number, nearly 60 % had an annual individual effective dose below recording level; the remaining employees showed an average annual individual effective dose of 1 mSv; while with certain professions the average annual individual effective dose is higher as usual, e.g. with doctors - cardiologists ranged about 2.5 mSv.

Personnel of specialized professions, such as service and inspections at the ionizing radiation sources, which amounts approximately to 514, achieved average annual individual effective doses of about 0.5 mSv.

The collective effective dose (including doses of aviation personnel) in 2006 was estimated at 15.9 Sv and the average individual effective dose per single monitored employee at 0.76 mSv.

In accordance with Decree No. 419/2002 Coll., on personal radiation ID cards, the SÚJB issued, based on the requests from licensees, 3,368 radiation ID cards (which includes 692 cards that were returned and are not valid) to 89 licensees (which includes two Slovak companies) from the year 2004. 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 2006.

Dosimetric services reported to SÚJB four cases when impersonal exposure of the dosimeters occurred with national health sector personnel due to improper handling and two cases of single-shot (for the relevant inspection period) exposure of personal dosimeters with dose exceeding 20 mSv were reconsidered.

Within the evaluation of annual doses received in 2005 (the CRPO processes data for current year in the second quarter of the following year, and in connection to data obtained from dosimetric services, therefore, data for 2005 was processed in 2006) 55 cases were detected in which recorded values of personal doses indicated excess of 20 mSv. Of this number 31 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 reconsidered, and 23 cases involved personnel in the national health sector, where all cases were reduced in terms of attenuation by a protective apron. One case of the total number involves the company manufacturing and distributing radioisotopes.

Based on the analysis of the findings of the reconsideration of higher doses it is apparent that the doctors performing intervention radiological operations remain the critical group of personnel with higher professional exposure (except for mine workers in the uranium-mining industry). Therefore, the SÚJB, in cooperation with IPVZ, organized another seminar for doctors on the subject of "Means of Reducing the Radiation Load of the Patient and Examiner at Intervention Operations".

The monitoring of personnel exposure continues for the fourth year at the workplaces, where significant increase of exposure from natural sources can occur, i.e. at the workplaces with estimated increased exposure due to cosmic radiation (aviation), increased radon occurrence in the air or at the workplaces where NORM or TENORM (Technologically Enhanced Normally Occurring Radioactive Materials) type materials are managed. The monitoring of personnel exposure at these workplaces is provided by eight dosimetric services - the Nuclear Physics Institute of the Academy of Science of the Czech Republic, the National Institute for Nuclear, Chemical and Biological Protection, Ing. František Vychytil, CSc., RADON, v.o.s., Environmental Protection Agency in the Czech Republic, PROTON PLUS, spol. s r.o., VÚHŽ a.s. and SEZIT PLUS s.r.o.

5.3.2. Population Exposure Control

Great effort made in the reduction of population exposure, focused on the reduction of exposure in which patients who undergo medical examinations with the use of ionizing radiation sources are exposed, the so-called medical exposure, and 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.

5.3.2.1. Medical Exposure

Within the support of SÚJB supervisory activity in this field, two development and research tasks were solved at SÚRO workplaces in 2006:

Topical problems related to radiation protection in the field of medical exposures

This concerns the problems from the field of radiotherapy and X-ray diagnostics (dosimetric properties of selected TL materials and their use for independent checks; risk associated with stray radiation in radionuclide irradiators; assurance of medical exposure conditions in maternity hospitals and at child clinics, including evaluation of radiation exposure of newborns). The task shall be completed in 2007;

Determination of patients' radiation load at examinations in X-ray diagnostics

Output of the task completed in 2006 involves documentation for acknowledgement of diagnostic reference levels or determination of new diagnostic reference levels for examination in X-ray radio-diagnostics.

The Central Database of Medical Exposures (CDLE) is used to evaluate the number of executed radiological operations. This database is operated on the basis of data on radiological operations reported by the General Health Insurance Company. In 2006, the evaluation of data files from the year 2002 was completed; the results were also used for UNSCEAR questionnaires. Data is anonymous in relation to patients, however, it was managed to obtain approval of processing the data files provided by health facilities. Identification of radio-diagnostic workplaces enables interface of examination and source registry on the level of a certain workplace. In 2006, the study at three radio-diagnostic workplaces (Bulovka Teaching Hospital, Kolín Hospital and Ústí nad Orlicí Hospital) was executed. Statistical assessments of operation frequency on single instruments may be used to regulate the medical exposure. The outputs are interesting also for next negotiations with the General Health Insurance Company (they show operation frequency on a certain instrument, on use of the instrument for the operation in question). Therefore, the SÚJB will also seek to extend the cooperation with the General Health Insurance Company, e.g. in the field of quality control of used instruments.

The SÚJB attention was also given to the assessment of the teaching and practical training and placement of radiological physicists, who shall work, from January 1, 2007, in a higher number for the radiotherapy and nuclear medicine departments as well as for radio-diagnostic departments. On request of the Ministry of Health the bachelor's programmes of radiological medical fields were reviewed.

In connection with the SÚJB authorization to transpose the Council Directive No. 97/43/Euratom, repeated meetings were held between the representatives of the Ministry of Health, 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 in order to coordinate the task "Radiation protection when providing health service". As part of this task, four grants of the Ministry of Health 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 clinical audits.

In cooperation with the Radiological and Pneumological Association of the Czech Medical Association of J. E. Purkyně, it was suggested to the Ministry of Health and the General Health Insurance Company to replace the radio-photografic examinations in chest physicians' practice with skiagraphic examination. This measure was taken and provides twenty-multiple reduction of individual dose of the patient at X-ray lung examination.

The SÚJB personnel worked as members of expert commissions of the Czech Ministry of Health and the Czech Medical Association of J.E. Purkyně - the Commission for Breast Tumours Screening and the Commission for Allocation Assessment of Select Sanitary Engineering Instruments. In 2006, the SÚJB submitted to the Ministry of Health draft amendment of the Recommended Standard in Providing and Reporting Breast Tumours Screening Operations in the Czech Republic (Ministry of Health Bulletin, part 11/02).

5.3.2.2. Exposure from Natural Sources

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 Government No. 970 of October 7, 2002 on Czech Radon Programme. In 2006, the SÚJB in this field particularly:

- Continued to cooperate with the regional offices and the National Radiation Protection Institute in the target search for inhabitants residing in exceptionally high radon risk areas. The search was focused on municipalities situated on the territory with high risk of radon occurrence in buildings;
- Cooperated with the departments participating in the Radon Program;
- Assured the issue of opinions to the owners of single-family and apartment houses, which are part of the documentation for allocating the financial contributions for radon curative measures (in total 16 opinions); 1 opinion was issued for sanitation of educational facilities, and in cooperation with the National Radiation Protection Institute, issued opinions on effectiveness of implemented radon curative measures before the payment of a grant (11 opinions and 1 for educational facility); 4 issued opinions were negative;
- Assured opinions for regional offices, which were part of the documentation for allocating the state grants for recovery of water mains supplying drinking water intended for public supply; in 2006, twelve applications were assessed and eight water mains were recovered.

Table 5.4 Number of objects allocated with the grant from the state budget for implementation of radon curative measures

	2000	2001	2002	2003	2004	2005	2006
Buildings	265	184	220 ¹⁾	14 ²⁾	16 ²⁾	12	11
Schools	17	13	7	0 ³⁾	0 ³⁾	1	1
Water mains	22	9	13	8	2	4	8

Notes:

- 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) Many 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 2006, the SÚJB, in cooperation with the National Radiation Protection Institute, assessed a total of 67 suspect cases of occupational disease, which included:

- With uranium mine personnel this concerned 47 cases of lung cancer and 13 cases of cancer of other organs. In 10 cases of lung cancer and three other cases of cancer, the probability of causality between the disease and work in underground uranium mines was

assessed as predominant; in four cases of lung cancer and other two cases of 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 7 cases of assessed diseases: 3 cases of lung cancer, one case of chronic lymphatic leukaemia, cataract, and kidney and prostate cancer. Causality between the work in an ionizing radiation risk area and the disease was proven only in one case of lung cancer (Cínovec ore mine).

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 works in the Commission of the National Institute of Public Health for occupational disease assessment.

A special attention was given to the initiative of the Confederation of Political Prisoners to extend the scope of compensated diseases by nosological unit - Jáchymov miner's anaemia. After discussing the matter with professional companies of the Czech Medical Association of J. E. Purkyně and the Ministry of Health, this proposal was not adopted, however, submitted documentation extended the knowledge by uranium mine personnel exposure, in particular in the 1950s in the last century.

On request of the Ministry of Health, the assessment of exposure and risk level of uranium mine workers in past was drawn up as documentation for follow-up examinations of these workers.

The dose estimate to the fetus as a result of diagnostic examination of the mother was done in a total of 38 cases. All requests were from radio-diagnostic examinations. In no patient was the dose estimated higher than 20.0 mSv, in seven cases the dose ranged from 5.0 to 10.0 mSv, and in other cases (31) it did not reach 5.0 mSv. In two cases, the dose estimate of mothers who held her child during examination was executed. The dose estimated was below 1 mSv. The assessments were submitted to the applicants the next day.

The cooperation with the Ministry of Health in assuring the system of providing assistance and special medical assistance to persons irradiated during radiation accidents continued by maintaining contacts with the established "Special Health Care Centres" (Bulletin of the Ministry of Health No. 12/2003) and the negotiation with the Ministry of Health 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 2006, the continuous preparedness of the entire emergency organization of emergency response was ensured at Dukovany and Temelín NPPs. The preparedness of the whole shift of the emergency response organization personnel was checked in 69 cases at Dukovany NPP and in 58 cases at Temelín NPP in 2006 in the form of control communication or call to exercise. The exercises (at least on one of the communication means) reached the success rate of 100 % at both nuclear power plants. In 2006, no emergency event was classified at Dukovany NPP and Temelín NPP.

According to the annual plan of emergency exercises of the ČEZ, a.s. company, a total of 9 exercises were planned for the year 2006, which included five exercises at Dukovany NPP and four exercises 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. by 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., as amended. In 2006, all training on emergency preparedness was held at nuclear power plants. It concerned primarily basic training for personnel and contractors, 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 11 inspections in the course of 2006; one of them was conducted at Dukovany NPP, one at Temelín NPP, two at the workplace of the Radioactive Waste Repository Authority, two at the workplace of ALLDECO.CZ, a.s., one at the workplace of the Nuclear Research Institute Řež, a.s., one at the workplace of ČVUT FJFI KJR, one at the workplace of Isotope Products Cesio, s r.o., and two inspections at crack detection workplaces – i.e. at the workplace TEDES Kadaň and ČKD Praha DIZ, a.s. 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 Staff 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 was approved on November 12, 2004, was revised in autumn 2006 and this update was implemented.

At the end of 2006, the staffing of the SÚJB Crisis Staff (KŠ SÚJB) was changed.

Also in 2006, the SÚJB in cooperation with the Fire Rescue Service of Prague took part in the preparation process of students and staff at primary and secondary schools within the framework of education concept in the field of human protection in case of emergency events.

6.2.1. Crisis Staff Activity

In the course of 2006, joint as well as individual trainings of the members of SÚJB Crisis Staff were implemented. A total of 11 various topical joint trainings were concerned.

In 2006, the continuous testing transmissions of data, from both nuclear power plants, on emergency preparedness describing condition of technology and systems, and radiation situation on the premises and in the vicinity, continued.

The system of servers enabling data acceptance from both NPPs and from all providers of data from the Radiation Monitoring Network designed for the activities of the Crisis Staff of SÚJB at both the central and the back-up workplace functioned reliably in the course of the year 2006.

6.2.2. Emergency Exercises

An emergency exercise of SÚJB mobile groups was held on June 20 - 21, 2006 in the Military Training Area in Vyškov. A total of 9 mobile groups (MS) participated in this exercise, one by one from every SÚJB Regional Center and from the National Radiation Protection Institute (SÚRO). The exercise was organized in cooperation with the 314th Mass Destruction Weapons Warning Center of the Ministry of Interior, whose members participated as observers. The subject of the exercise was the threat of terrorist attack on the territory of the Czech Republic with the use of a "dirty bomb". Both the objective and the tasks of the exercise were accomplished.

The Crisis Staff of the State Office for Nuclear Safety also participated in the emergency exercises organized by other institutions, e.g. the NATO "CMX 2006" exercise, the "OCHRANA 2006" exercise organized by the Ministry of Interior, the IAEA "Convex 1a", "Convex 2a" and "Convex 2b" exercises and the EU "ECURIE Level 3" exercise.

In accordance with the approved plan, the Crisis Staff of the State Office for Nuclear Safety executed trainings on a monthly basis. For this purpose, three different scenarios were prepared – accident at Temelín Nuclear Power Plant, accident at Dukovany Nuclear Power Plant and emergency event with ionizing radiation source. With the exception of one training, which was postponed to January 2007, all planned trainings were implemented.

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

The Government Resolution No. 388 to the Report on Operation and Equipment of the Radiation Monitoring Network (RMN) was adopted on April 12, 2006. This resolution, which supersedes the Government Resolution No. 478/2001, stipulates conditions for the RMN operation and renewal of its equipment for the period of 2007 to 2011 and establishes the amount of necessary financial means.

The SÚJB concluded the last so-called implementing contract to the general contract with the Ministry of Defence in January 2006, i.e. the Contract on Operation of the Components of the Radiation Monitoring Network within the sphere of action of the Armed Forces of the Czech Republic.

Monitoring of the radiation situation within the Czech Republic was assured in the year 2006 by the State Office for Nuclear Safety, the National Radiation Protection Institute, all contracting partner organizations (i.e. the Czech Hydrometeorological Institute, the T. G. Masaryk Water Research Institute in Prague, the Customs Administration, the General Directorate of Fire Rescue Service of the Czech Republic, Police of the Czech Republic, the State Veterinary Institute in Prague, the Agricultural and Food Inspection Authority, the Central Institute for Supervising and Testing in Agriculture, the Forestry and Game Management Research Institute and Armed Forces of the Czech Republic) and licensees for operation the nuclear power plants, i.e. ČEZ, a.s.

Monitoring data was entered into the Information System (IS) of the Radiation Monitoring Network on a continuous basis. Selected and processed data from this system was transferred to the "EURDEP" system of the European Union and, on the basis of bilateral agreement, to Austria. In June 2006, data from the radiation monitoring within the Czech Republic for 2005 was transferred to the "REM" database of the European Union.

In 2006, the Czech Republic continued to participate in the "AIRDOS" project of the European Union. As required by the responders, the project was further specified or the large set of information on monitoring systems handed over in 2005 was supplemented.

7.1. Radiation Monitoring Network Control, Operation and Renewal

In order to verify the measurement results, the SÚJB arranged four comparison measurements for selected RMN components in the year 2006. The LRKO of Dukovany NPP, LRKO of Temelín NPP, RC in České Budějovice, RC in Hradec Králové, RC in Plzeň, RC in Ústí nad Labem, RC in Ostrava, the National Radiation Protection Institute in Prague, the National Radiation Protection Institute in Hradec Králové, the National Radiation Protection Institute in Ostrava, the State Veterinary Institute in Olomouc, the State Veterinary Institute in Prague and the T. G. Masaryk Water Research Institute in Prague participated in the first measurement - Determination of radionuclides by means of gamma spectrometry. The laboratories LRKO of Dukovany NPP, LRKO of Temelín NPP, RC in Brno, the National Radiation Protection Institute in Prague and the T. G. Masaryk Water Research Institute in Prague participated in the second comparison measurement - Determination of tritium activity concentration in water. In the third comparison, the laboratories LRKO of Dukovany NPP, LRKO of Temelín NPP, RC in Ostrava, the National Radiation Protection Institute in Prague, the National Radiation Protection Institute in Ostrava and the T. G. Masaryk Water Research Institute in Prague had to determine the activity concentration of ⁹⁰Sr in water. The RMS components from LRKO of Dukovany NPP, LRKO of Temelín NPP and the National Radiation Protection Institute in Prague and other operators of TLD systems, i.e. the National Institute for Nuclear, Chemical and Biological Protection in Kamenná, participated in the fourth measurement - TLD comparison measurement. Criteria used by IAEA were chosen for the assessment of all comparison measurements. Detailed assessment of all four measurements will be carried out in the first quarter of the year 2007.

The SÚJB, pursuant to the Government Resolution No. 478/2001 and No. 388/2006, continued work on RMN renewal, innovation or retrofitting in 2006 using SÚJB financial means. The innovation of the equipment of laboratory groups, TLD network, mobile and air groups, and the data and information transmission system was especially implemented. Means spent in 2006 to recover the RMS equipment are indicated in Table No. 7.1.

Table No. 7.1 Costs incurred in relation to RMS recovery in 2006, in “000” CZK

RMN component	Assumption	2002	2003	2004	2005	2006	Total
SVZ	35 000	10 800	8 845	4 890	839	0	25 374
TLD network	5 000	0	0	2 869	556	2 351	5 776
MMKO	10 000	0	1 800	6 285	1 360	0	9 445
MS and LeS	20 000	3 100	3 225	4 524	3 611	1 052	15 512
LS	15 000	11 500	1 317	1 118	2 930	18 023	34 888
Data transmission system	10 000	0	0	2 450	547	769	3 766
TOTAL	100 000	25 400	15 187	22 136	9 843	22 195	94 761

7.2. Summary of Radiation Monitoring Results

The Report on Radiation Situation within the Czech Republic for 2006 is included in Part II of the presented Annual Report. In summary, it may be stated that there was no unintended release of radionuclides into the environment registered in 2006 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 values of dose rate 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 2006. 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 decay, 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 in the vicinity of Dukovany and Temelín nuclear power plants and on 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 and bacteriological and toxic weapons remained one of the essential activities of the SÚJB also in 2006 contributing 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 supervision of the observance of measures related to the prohibition of 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 relating to chemical weapons prohibition and on amendments and additions to related acts;
- Act No. 281/2002 Coll., on some measures related to the prohibition of bacteriological (biological) and toxic weapons.

The framework for the performance of the state-governed supervision in this field covers the fulfilment of the obligations resulting for the Czech Republic from the international treaties, to which the Czech Republic is the party (the Treaty on the Non-Proliferation of Nuclear Weapons - NPT, the Comprehensive Nuclear-Test-Ban Treaty - CTBT, the Chemical Weapons Convention - CWC, the Bacteriological (Biological) and Toxic Weapons Convention - BTWC), and from its membership in the European Union.

SÚJB experts also participate in activities within international control regimes (Nuclear Suppliers Group, Zangger Committee, Australian Group). Operation of such groups does not have any internationally legal basis; however, they play an important supporting role in securing measures related to the non-proliferation and prohibition of weapons of mass destruction. The membership of such control regimes includes an overwhelming majority of technology-advanced countries – potential technology suppliers.

All SÚJB activities in the field of the prohibition 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 Mass Destruction Weapons, which the Czech Republic accepted.

8.1. Non-Proliferation of Nuclear Weapons

8.1.1. Inspections and Their Findings

In 2006, the SÚJB also sought to make the control activities in the field of non-proliferation of nuclear weapons more effective 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 SÚJB responds thus, within the sphere of its authority, directly 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 stop the illicit trafficking of nuclear materials and other nuclear items suitable for development and production of nuclear weapons, and to reduce the risk of the occurrence of nuclear terrorism also on the state level.

The SÚJB inspection activity in the field of the performance of state-governed supervision of nuclear items, as in the previous years, aimed at verifying the record keeping and method of management of nuclear materials located in the nuclear facilities, on inspections at the holders of the licence for nuclear materials management (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 perform the inspections with the use of shortened time for notification of the intention to carry out the inspection to 24 hours or 2 hours before their initiation. In the course of the inspection according to the Additional Protocol, it is also possible to take analysis samples both from the location concerned and from the environment around the inspected location. The laboratory analysis of samples taken in this way increases the efficiency of inspections by allowing the exposure of the undeclared activities carried out a long time ago.

In 2006, there were 125 inspections carried out in total in the field of the control of non-proliferation of nuclear weapons. The number included 34 inspections carried out by the SÚJB and focused on nuclear materials and 5 inspections focused on exports/imports of nuclear items performed on the basis of SÚJB licence. The SÚJB inspectors together with IAEA inspectors, carried out 68 inspections focused on verification of data of the State System of Accounting for and Control of nuclear materials submitted by the SÚJB to IAEA on a monthly basis, and 4 inspections focused on verification of data transferred by the 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 the SÚJB were extended by inspections carried out together with the European Commission/Euratom (European Atomic Energy Commission) inspectors. In the year 2006, a total of 14 joint inspections with the European Commission were carried out with the particular aim of verification of the physical inventory of nuclear materials and verification of the "Basic Technical Characteristics" for individual nuclear facilities.

On IAEA request, the inspections in connection with nuclear fuel load to individual reactors of Dukovany NPP were included into the planned inspections in 2006 beyond the scope in past years (7 inspections from the above mentioned total number). The SÚJB included, also

on IAEA recommendation, new inspections related to sealing of second and third lid of CASTOR 440/84 containers before their storage in the Interim Spent Fuel Storage Facility at Dukovany NPP (6 inspections from the above mentioned total number).

At the end of 2006, the inspection related to the verification of nuclear materials before their transport to the Russian Federation was conducted at the Nuclear Research Institute Řež. Repatriation of high-enriched nuclear fuel to the country of origin represents a factual 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 IAEA.

Results of the SÚJB inspections carried out in 2006 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. Joint inspections carried out with the IAEA inspectors and the European Commission inspectors proved fulfilment of all international commitments of the Czech Republic resulting both from the Non-Proliferation Treaty and from the membership of the Czech Republic in the European Union. Based on results of all national and international inspections it may be thus stated that in the Czech Republic, in the monitored period, there was no use of nuclear materials and selected items in the nuclear area for undeclared purposes.

8.1.2. Granted Licences and Communication

Granting of licences for nuclear material management, licences for exports and imports of nuclear materials, selected items and dual use items in the nuclear area and development of record 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 supervision of nuclear items, the SÚJB issued a total of 44 licences for nuclear materials management pursuant to Section 9 Par. 1 Letter l) of Act No. 18/1997 Coll. and 2 decisions on revoking the licence for nuclear materials management in the year 2006.

According to data kept in the State System of Accounting for and Control of nuclear materials (SSAC), a total of 175 holders of the licence for nuclear materials management were registered, included for the recording purposes in 16 material balance areas (MBA) in the Czech Republic as of December 31, 2006. Based on agreement between the SÚJB, IAEA and the European Commission, a new MBA CZ-S was created at the holder of the licence for nuclear materials management - SÚRAO (Radioactive Waste Repository Authority).

Total number of 175 holders of the licence for nuclear materials management includes 167 licensees that manage nuclear materials outside the nuclear facilities and are included in the MBA CZ-Z, where the SÚJB is fully responsible for keeping the records of nuclear materials. Total average amount of nuclear materials increased slightly at all licensees in the year 2006 and achieved the value of 1,570.68 SQ (SQ - 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 85 licences and 13 resolutions in 2006 pursuant to Section 9 Par. 1 Letter k) of Act No. 18/1997 Coll. From this number 6/10 licences were granted for import/export of nuclear materials, 10/4 licences for import/export of selected items and 14/35 licences for import/export of dual use items in the nuclear area. Two resolutions were issued for the export and return import of

selected items. A change of licence conditions was issued in one case. The administrative proceeding was terminated by resolution in 4 cases, since the applicant withdrew the application. In the course of the licensing process, the administrative proceeding in the matter of the licence for nuclear item export was suspended by resolution in 9 cases by reason of defects in the application. The decision not permitting the export of dual use item in the nuclear area to the Democratic People's Republic of Korea, Syria or Iran was issued in 3 cases.

In 2006, the SÚJB activities, when meeting the commitments resulting from the Additional Protocol, focused particularly on the preparation of periodic quarterly declarations related to exports and imports of selected items in the nuclear area, on the preparation of periodic 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 information on management of plutonium used in research activities at the Nuclear Research Institute Řež, a. s. in past was provided to the IAEA on its request.

The accession of the Czech Republic to the European Union brought the requirement for sending periodic safeguards monthly reports on nuclear material accounting at the individual licensees to manage nuclear materials. Requirements on the content of the reports are stipulated by Commission Regulation (EURATOM) No. 302/2005. In view of the fact that the European Commission failed to complete the implementation of ACCESS program designed for submission of these record reports, the European Commission agreed to an acceptance of report sending through the SÚJB, i.e. for individual nuclear facilities. In accordance with the Safeguards Agreement and the above mentioned arrangement with the European Commission, the SÚJB has sent, since the year 2004, periodic monthly reports to the IAEA as well as to the European Commission, in modified format.

8.1.3. International Aspects

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 for the Czech Republic from the relevant international treaties. 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 Member States Support Program for IAEA Safeguards (CZSP) is highly assessed on the part of the international community. Under this program, 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.

In accordance with the adopted projects of CZSP in 2006, the SÚJB organized in cooperation with the state-owned enterprise DIAMO s.p., o. z. GEAM Dolní Rožínka, and IAEA three technical visits of IAEA inspectors in the Czech uranium mines. A total of 47 persons from IAEA participated in such technical visits conducted in March, May and October. The technical visits were primarily focused on gaining practical experience for performing inspection activities to be carried out within the Additional Protocol at similar facilities and locations.

The organization of seminars for IAEA personnel processing safeguards data sent by member states to the IAEA on a monthly basis continued in past year. The seminars were focused on the process of preparation, creation and sending of data to IAEA with stress put on QA/QC of

the whole process. A total of 18 IAEA employees participated in two courses of these seminars.

Generally ninth training course of new IAEA safeguards inspectors was conducted in cooperation with Dukovany NPP on September 17 - 23, 2006 at this location. From originally planned two courses only one was held by reason of insufficient number of new IAEA inspectors, but with number of participants extended to 14 + 3 from IAEA. In addition, the SÚJB extended its cooperation with Dukovany NPP in the last year within the CZSP by project focused on testing of new IAEA surveillance systems developed for verification of nuclear materials in the interim spent fuel storage facilities.

The Central Analytical Laboratory of the Nuclear Research Institute Řež, a.s. was involved, through the SÚJB, in the CZSP program. In the year 2006, the Central Analytical Laboratory analysed nuclear material samples (this involved particularly uranium solutions prepared in the Institute for Reference Materials and Measurements) sent by IAEA. The objective of the task was continuous check of the Central Analytical Laboratory for preparedness to provide services for IAEA safeguards system.

The SÚJB is currently considering involvement in three other projects within the CZSP proposed by IAEA. These involve the transmission of safeguards data via satellite technology, evaluation of data acquired via satellite technology and special geologic radars and its use for safeguards purposes in verification of spent fuel deep repositories, and equipment testing for verification of spent nuclear fuel in interim dry storage facilities.

The involvement of the Czech Republic in the CZSP is appreciated by IAEA, especially in the field of personnel training and providing of nuclear facilities for testing of new IAEA surveillance systems. The level of the control of non-proliferation of nuclear weapons in the Czech Republic is also appreciated, including fulfilment of the performance of state-governed supervision of nuclear materials and state-governed supervision of export and import of controlled items in the nuclear area.

8.2. Control of the Prohibition of Chemical Weapons

8.2.1. Inspection Activity and Communication

The objective of the inspection activities in the field of the control of the prohibition of chemical weapons is to stop the illicit management of controlled chemical substances and therefore to effectively prevent the risk of chemical terrorism.

In addition to the performance of its own inspection activity, the SÚJB made great effort in last year to ensure commitments resulting for the Czech Republic from the Chemical Weapons Convention (CWC), when the SÚJB performs a function of the so-called "National Authority" for implementation of the CWC in the Czech Republic.

In 2006, the SÚJB inspectors carried out a total of 48 planned inspections. The main effort of the inspection activity was primarily focused on inspection of organizations handling with Schedule 1 chemicals according to the CWC (high-level hazardous chemicals), where a total of 12 organizations were inspected, which are the holders of licence to manage high-level hazardous chemicals. A total of 11 inspections were performed in organizations handling with Schedule 2 chemicals (hazardous chemicals) and 15 inspections in organizations handling with Schedule 3 chemicals (less hazardous chemicals). Ten other inspections were performed in enterprises producing discrete organic chemical substances. During these inspections the main attention was given to enterprises, which are declared duly and annually to the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW) and which

may be subject of the inspections of this international organization. Their preparedness for acceptance of the international inspections was also verified. In order to fulfil the inspection objectives in producing chemical plants, a detailed check of in-plant records was performed. The inspection team verified the material balance of production line or operation and data consistency in selected production records from a certain time period to ensure that there are no unknown losses or transactions of controlled chemical substances.

Two unplanned inspections were performed in illegal toxic substance storage facilities (Libčany and Chvaletice).

During routine inspections, no breach of Act No. 19/1997 Coll., on some measures concerning chemical weapons prohibition, and implementing Decree No. 50/1997 Coll. was found. Therefore, it was not necessary to propose any penalties.

The SÚJB monitors other organizations, which could manage Schedule 2 and 3 chemical substances in their activity. This involves in particular rubber and plastic industry, textile industry, graphical-arts industry, paper industry, cosmetics and domestic chemistry. Continuous monitoring of possible plants producing or using discrete organic chemicals, especially of the PSF type (chemicals containing phosphor, sulphur or fluor) is executed accordingly.

In October 2006, the international inspection of the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons was performed in the Synthesia, a.s. company in Pardubice. In the course of this international inspection, the consistency of data reported by the company and declared by the Czech Republic to the Organization for the Prohibition of Chemical Weapons with data detected on site was confirmed.

In accordance with the requirements of the convention, the SÚJB processes, for the need of the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons, declarations of aggregate national data of Scheduled chemicals, declarations of facilities handling chemicals of Schedule 2 and Schedule 3, and declarations of plant sites and plants producing discrete organic chemicals.

In 2006, in accordance with the requirements of the CWC, the declarations of the past activities on the territory of the Czech Republic for 2005, declarations of anticipated activities for 2007 and declarations of changes in the declaration of anticipated activities for 2006 were executed according to the so-called "OPCW Declaration Handbook". Also the National Programmes related to protective purposes of the Czech Republic were notified.

Data related to the declaration of past activities for 2005 was reported by 51 organizations to the Office. Data provided by 29 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 aggregate national data summary for the Czech Republic. The declaration of past activities for 2005 further included data for one organization processing Schedule 2 chemicals, two plant sites producing three Schedule 3 chemicals in three plants, and data for 28 plant sites producing discrete organic chemicals in 64 plants in total.

Data on processing of Schedule 2 chemicals in one organization and on the production of Schedule 3 chemicals in two plant sites (three plants) was included in the declaration of the planned activities for 2007.

There are 11 licences granted currently for management of high-level hazardous chemicals (Schedule 1 chemicals of the CWC). The licences are granted for three years since 2003.

8.2.2. International Aspects

In addition to regular meetings of the Executive Council of the Organization for the Prohibition of Chemical Weapons (March, July, November), SÚJB experts participated actively in a number of expert meetings in the year 2006. In particular, this involved the seminar to the strategy of European Union countries for weapons of mass destruction in relation to chemical industry, the meeting of States Parties to the East European Regional Group focused on the implementation of Article VII of the convention (National Implementation Measures) and on industrial declaration processing method, two meetings of the OPCW Technical Secretariat Working Group on problems related to the chemical industry and, last but not least, the seminar on problems related to the improvement of the protection and assistance system according to Article X of the CWC. The SÚJB representatives participated in periodic meeting of the National Authorities before the meeting of November 11th regular session of the OPCW States Parties Conference.

The SÚJB also participated in the organization of weekly training courses for the inspectors of the OPCW Technical Secretariat (25 inspectors in total) aimed at detecting, sampling and decontaminating of chemical warfare agents.

In cooperation with SÚJB and the OPCW Technical Secretariat, another training course was organized in May in the Institute for Population Protection (IOO) in Lázně Bohdaneč, which was focused on civil defence against chemical warfare agents. The course was intended for specialists from the States Parties to the CWC and 19 foreign experts participated therein. In October, a seminar for further organization of training courses to the benefit of the the States Parties to the Chemical Weapons Convention was held in Bratislava under control of the OPCW Technical Secretariat. During the negotiation, the OPCW Technical Secretariat asked the Czech Republic in advance to consider the possibilities to organize, in cooperation with the SÚJB and the Institute for Population Protection in Lázně Bohdaneč, higher-level training - the so-called "Advanced Course" beginning in the year 2007.

The Czech Republic is currently strongly represented in the bodies and commissions of the Organization for the Prohibition of Chemical Weapons - in the so-called "Commission of Confidentiality", in the network of legal experts, in the consultative body for financial and administrative issues, and in the team of experts of OPCW "Protection Network". In addition, the Czech Republic representative is currently holding the office of the Chairman of the Scientific Advisory Board of the OPCW Technical Secretariat General Director and another two specialists from the Czech Republic have been operating in the group for the assessment of spectrums of chemical substances relevant to the Chemical Weapons Convention.

8.3. Control of the Prohibition of Biological and Toxin Weapons

8.3.1. Inspection Activity

The SÚJB carries out the inspection activity in the field of the control of the prohibition of biological weapons in compliance with Act No. 281/2002 Coll. and follow-up legal regulations. As in the previous years, the activity focused on the observance of legal obligations of the holders of the licence to manage high-level risk biological agents and toxins (VRAT) as well as at the entities subjected to the notification duty on management of risk biological agents and toxins (RAT). During these inspections, the record books were checked for correctness and truth of data filled in the declarations, purpose, scope and method of managing the VRAT and RAT.

Persons inspected pursuant to provision of Act No. 281/2002 Coll. involved two holders of the licencet to manage genetically modified organisms granted under the Act No. 78/2004

Coll. During the inspections conducted at these entities, the inspectors required in addition the production of valid licence to manage genetically modified organisms and documentation, on the basis of which the licence was granted by the Ministry of Environment of the Czech Republic.

In relation to the requirements of the UN Security Council Resolution No. 1540/2004 and Act No. 186/2004 Coll., the Office takes steps for further extension of inspection activities. In the monitored period, this involved especially the field of the acquisition, import and export, storage and security of VRAT and RAT against 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 2006 to be presented to the UN Security Council in compliance with the provision of the Bacteriological (Biological) and Toxin Weapons Convention (BTWC).

A total of 46 inspections were carried out in 2006 in the field of the performance of state-governed supervision of adherence to the prohibition of biological and toxin weapons. During these inspections, two inspected entities were found suspected of unauthorized activities contrary to Act No. 281/2002 Coll. Necessary organizational and legal measures were adopted in both cases. No serious breach of the Act and its implementing decree was found at other entities. Detected minor deficiencies related almost to keeping of records and data included in the declarations. In most cases, such deficiencies were corrected immediately in the presence of inspectors or within regular term defined in the respective protocol.

Inspection activities were also focused in the course of 2006 on monitoring and search of new information from open sources and their verification. The effect of this effort was the inclusion of 7 new entities into the National Registry of entities managing the VRAT or RAT and the issue of 15 new decisions on the management of the VRAT.

In connection with the fulfilment of another requirement of the UN Security Council Resolution No. 1540/2004, which challenges the United Nations member states to develop the methods of international cooperation, public awareness and publication activities, a number of seminars on the subject of biological and toxin weapons threat risk reduction took place in the year 2006 under the auspices of SÚJB. Other lectures on the same subject 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 Aspects

In accordance with the worldwide trend, the deepening of SÚJB international cooperation in the field of the prohibition of biological weapons continued in the year 2006. The activities on the level of international control regimes focused on the field of non proliferation and prohibition of Weapons of Mass Destruction (e.g. PSI, AG) continued at meetings of working groups of involved parties.

SÚJB representatives took part in the seminar on the end use control and export control held last June in Berlin, in the preparatory session to the sixth Review Conference hold in September in Paris, in the periodic session of the Australian Group and in the periodic Review Conference of the BWC held in Geneva.

Four organizations taking part in the national biological defence research and three organizations producing vaccines for human or veterinary medicine were included in the Czech Republic's National Summary Declaration for 2006 prepared voluntarily by member states to strengthen the confidence of the BWC contracting parties. In case of the Czech

Republic, increased interest of member states for the content of the declarations was shown by request for an exchange of information or establishment of bilateral relations.

9. INTERNATIONAL COOPERATION

In the field of international cooperation, the SÚJB focused its activity in the year 2006, in particular, on the maintenance and development of relations with the partner organizations, on the coordination of the international technical cooperation both on bilateral and on multilateral level, and, last but not least, on the cooperation with other member states of the European Union. In addition, other international activities were directed towards the field of control regimes specified in item 8 of the Report.

9.1. Bilateral Cooperation

One of the long-term priorities of the SÚJB 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. In addition, a number of ad hoc meetings with regulatory staff of other countries are held at the international actions (seminars, conferences, working groups).

Federal Republic of Germany

A bilateral meeting organized in accordance with the Intergovernmental Agreement on Issues of Common Interest in the Field of Nuclear Safety and Radiation Protection was held in November in Munich. The agenda of the meeting involved especially the subjects stipulated by agreement related to legislative changes, experiences in the surveillance of nuclear facilities, including information on the solution of important operational events that occurred at nuclear power plants, information from the field of radiation protection, subjects discussed within the EU authorities and the Western European Nuclear Regulators Association - WENRA. Positions of both states are very close especially in the question of new legislation on European level in the field of nuclear safety.

A seminar held approximately one month in advance in Prague preceded an annual meeting. The subject of the seminar was the use of probabilistic approach to an assessment of safety of nuclear facilities. A number of analyses from both countries were presented. In several cases, the analyses were developed to applications specifically used at nuclear power plants both for planning of, e.g. maintenance, and for assessment of the so-called safety profile of operations already executed. However, it was shown that a wider introduction of similar tools to a daily regulatory practice will require long-term effort to be made in both countries.

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, the so-called Information Agreement. The negotiations on matters of procedure and possible accompanying arrangements to the agreement were completed at the beginning of the year 2006 and, on May 24, 2006, the Government of the Czech Republic approved, by its Decree No. 609, the signature of the Protocol between the Government of the Czech Republic and the Government of Austrian Republic amending 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 annual meeting of the representatives of the Czech Republic and Austria, taking part in the fulfilment of the existing bilateral agreement, was held early in November in Prague. The Czech side reported on the current situation at Temelín and Dukovany Nuclear Power Plants. The cooperation in the field of data communication for emergency management was again well appreciated. The SÚJB included into the program also comprehensive information about harmonization of legislation and regulatory practice in the nuclear field executed within the WENRA association.

A number of traditional subjects related to Temelín NPP were discussed at the seminar organized for Austrian experts by the NPP operator late in September directly at the power plant. A part of the seminar was also extensive inspection of the power plant. The outage of Unit 1 enabled Austrian experts to visit areas inside the containment otherwise inaccessible to visitors. A number of questions were raised at the seminar related to both general aspects of nuclear safety and very specific questions to media-discussed subjects such as operational problems of nuclear fuel. Discussion subjects oscillated from the solution of protection against high-energy pipe rupture discussed already over a longer period to experiences with the operation of reconstructed network of seismological stations surrounding power plant site. In SÚJB opinion, the seminar offered very detailed information and, together with excursion, a proof of high transparency to the Austrian party.

Slovakia

Also in the year 2006, the cooperation with the Nuclear Regulatory Authority of the Slovak Republic was the most extensive and intensive bilateral cooperation for SÚJB. A number of contacts are rather informal, i.e. they are primarily made during consultations over specific problems on the level of inspectors and on different managerial levels. With respect to partially different institutional arrangement in Slovakia, the cooperation primarily deals with nuclear safety, practical measures on nuclear material non-proliferation and coordination at various international forums, mostly IAEA and EU. In practice, questions of regulatory practice both in the individual cases (operational events at Dukovany, Bohunice and Mochovce power plants) and on the system level (legislation, procedures) are discussed within the framework of this bilateral cooperation. There is an advantage in having very similar technology installed at the nuclear power plants and in lack of language barrier. Joint inspections at selected facilities are organized on a regular basis.

Analysis of operational events at nuclear power plants and questions of nuclear safety culture of licensees in competitive environment dominated the annual bilateral meeting in Prague. The question of changes in legislation was also discussed. The coordination of both Offices in harmonization effort within the WENRA was the key point of the meeting. A technical visit of the Richard Radioactive Waste Repository was organized for the Slovak experts within the meeting.

Poland

The first annual bilateral meeting under the new Intergovernmental Agreement on Information Exchange in the Nuclear Area was held in December in Prague. In view of the fact that Poland does not operate nuclear power plant yet, the discussion during the meeting concentrated on issue of radiation protection, waste storage and, last but not least, on problems related to research reactors. Problems related to the administration of national registers of ionizing radiation sources and professional exposure control were discussed in detail. Other subjects concerned possible recovery of the power reactor construction project in

Poland and potential consequences for state-governed regulatory authority (for example, inspector training). Both parties exchanged their experience in the preparation of spent fuel transport from the research reactors back to the country of production, i.e. to the Russian Federation. The visit of the Nuclear Research Institute and the Nuclear Physics Institute in Řež together with inspection of LVR15 research reactor and newly installed Tandetron linear accelerator was conducted within the annual meeting.

The United States of America

A leading subject of the cooperation with the United States of America in the last year concerned the transport of spent nuclear fuel from the research reactor in Řež, which is scheduled for 2007 within the framework of the American Global Threat Reduction Initiative. This project is significant from both viewpoints - protection against the international terrorism (risk of abuse of high-level enriched spent fuel is higher) and saving of capacities and funds that would be necessary to spend for long-term storage and protection in future years in the Czech Republic. The project of the transport of spent nuclear fuel from the Czech research reactors is pilot project and is thus quite monitored on the international level. The SÚJB participates in the project as a regulator, however, it also ensures coordination with IAEA and respective organizations of USA, Russian Federation, Slovakia and Ukraine. In this case, the SÚJB provides consultations with the Ministry of Foreign Affairs and Ministry of Industry and Trade of the Czech Republic in preparation of the contractual framework for the transport.

Ukraine

In 2006, cooperation with Ukraine was conducted on a working basis rather than on a formal basis. The main subject concerned nuclear power plant safety. In the year 2006, the SÚJB was involved in the implementation of several projects supported by the Czech Republic (see cooperation with IAEA) and the agreement on cooperation in transporting spent fuel from the research reactor from the Czech Republic to Russia (see cooperation with the United States of America).

Central Europe

The nuclear regulatory bodies of four states accessing to the European Union (Czech Republic, Slovakia, Hungary and Slovenia) established an informal group in 2003. The objective of the group is to create the framework for discussion of the important subjects of the assessment of safety and operation of nuclear facilities in the region and possible subsequent coordination of negotiating positions in the EU or IAEA. By cooperating in this group the members wish, especially, to raise the effectiveness of cooperation over subjects of common interest. The group meets on a bi-annual basis - in autumn within the framework of the IAEA General Conference and in spring at a two-day meeting. Both ideas (exchange of information and position and coordination) proved to be very useful and the group is now respected in the international field.

Spring meeting was held in 2006 in Hungary. As usual, the main subject concerned the assessment of operational events that occurred at nuclear facilities and their solution. The subjects included questions of nuclear fuel, increase in reactor power levels and lifetime lengthening. Other topics already discussed in the past period involved the question of effectiveness of the regulatory activity and its planning. The cooperation in working groups within the European Union and accesses to some projects and procedures of the IAEA Technical Cooperation Department were also discussed in an extensive manner.

9.2. Multilateral Cooperation

As in the previous years, the activity of the SÚJB within the multilateral relations focused in the year 2006 on the international organizations, particularly on the IAEA. In compliance with the Atomic Act, the SÚJB assures technical cooperation with this organization. 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 treaties in the nuclear area that were primarily concluded to support international cooperation and to increase transparency and trust. The fulfilment of the commitments resulting for the Czech Republic from particular international treaties in nuclear area 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. The SÚJB's Chairperson will preside over this prestigious association in 2007 to 2009.

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. At the same time, 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 among 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's Chairperson is a member of the Permanent Consultative Committee of the IAEA Managing Director, which discusses and recommends final proposals for standards to the Board of Governors for discussion.

One of the pillars of the IAEA activity is to provide technical support to member states in the peaceful utilization of nuclear energy and ionizing radiation. This support is provided by the IAEA in various forms – information providing, expert training, transfer of know-how and technologies. The participation in exchange of information and experience through conferences, seminars, courses and fellowships was always the most important for the Czech Republic. In past years, the Czech Republic utilized the IAEA assistance in implementation of selected projects for the support of application of advanced nuclear technologies in medicine, research and environmental protection. The last one - installation of new linear accelerator at the Nuclear Physics Institute of the Academy of Science of the Czech Republic in Řež - was completed in the year 2006.

Along with other advanced countries, the Czech Republic supports, in a variety of ways, the IAEA attempt to provide technical support to member states, who apply for it. In 2006, various organization in the Czech Republic provided 23 longer expert fellowships (1-12 months) and double number of shorter scientific visits. The fellowships and study visits focused primarily in the field of radiation protection, nuclear medicine, emergency

preparedness and nuclear safety. The SÚJB Radiation Protection Division organized regional training course focused on "licensing and inspections of ionizing radiation sources" for participants from Algeria, Lebanon, Albania, Tajikistan and Kyrgyzstan. The course consisted of two parts – theoretical (3 weeks in June) and practical (2 weeks in November) focused on performance of inspections in medical and industrial applications with ionizing radiation sources.

The Czech Republic contributes to the IAEA budget by approximately one percentage (this share results from the economic maturity index of the state in question). The contribution is paid from the state budget – Chapter of the Ministry of Foreign Affairs. The contribution to the Technical Cooperation Fund, from which the above-mentioned expert activities are financed, is covered by the budget of SÚJB. In addition, the Ministry of Foreign Affairs and SÚJB support, after approval of the Czech Government, selected IAEA projects in the form of extrabudgetary contributions from the relevant chapter of the state budget. These contributions are directed both into the fields considered by the Czech Republic as internationally important (e.g. terrorism-fighting) and to the improvement of nuclear safety and radiation protection in less developed states. The contributions are positively appreciated 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. Experience shows that relatively small financial means may have a significant international-political impact in the field of peaceful utilization of nuclear energy and, in particular, in the field of non-proliferation of weapons of mass destruction. Moreover, extrabudgetary funds support the development of industry and services in the Czech Republic. In the last year, Czech entities participated in more than 70 % of projects supported from those 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 accordance with Government Decree No. 387 of April 12, 2006, the SÚJB earmarked CZK 7.4 mil. for financial support of technical cooperation program in 2006. In addition to regular contribution to the Technical Cooperation Fund in the amount of CZK 3,221,000 and required shares of costs of implementation of long-term fellowships of our experts, other contributions to the support of the following national projects were provided:

- CZK 2.5 mil. for co-financing of the activities of the IAEA Program of Assistance for Cancer Treatment (PACT), which supports cancer diagnostics and treatment in the least developed member states and is also funded with a part of the financial premium related to the Nobel Peace Prize 2005 and the special contributions provided by a number of the developed countries. With respect to its significance, the Czech Republic is planning similar contribution in the following years;
- CZK 0.775 mil. for supporting the organization of the IAEA expert seminar on the subject of nuclear safety management;
- CZK 0.375 mil. for supporting the implementation of long-term fellowships of our experts from a wide spectrum of fields from nuclear safety to medical applications;
- CZK 0.5 mil. was provided for reconstruction of the IAEA information safeguards (non-proliferation of nuclear materials and technologies) system.

The SÚJB sponsored two projects co-financed by the Czech Republic in past period within the foreign development cooperation (Ministry of Foreign Affairs Chapter). This involves the long-term support of the improvement of nuclear safety of nuclear power plants in Armenia (CZK 1.4 mil.) and in Ukraine (CZK 1.5 mil.).

The SÚJB also cooperates with the Ministry of Foreign Affairs on identification and assists in implementation of projects co-financed from the Ministry of Foreign Affairs Chapter. In 2006, this concerned the support of the project for improvement of physical protection level of the Armenian Medzamor NPP and the IAEA activities related to UN Security Council Resolution No. 1540; both through the Nuclear Terrorism Protection Fund established by the IAEA with the approval of member states. Another support concerned technical assistance in assessing the lifetime of important components of nuclear power plants in Ukraine and in supporting the building of the state-governed surveillance of radiation protection of Kyrgyzstan. SÚJB personnel also participated, as experts, in some activities within the scope of the project.

The SÚJB will try to maintain the positive international-political response to the support of the important IAEA projects in future. Within the budget for 2007, the SÚJB planned the amount of CZK 6.4 mil. for this item. This item includes the contributions to the implementation of the below mentioned projects:

- CZK 2.70 mil. for the Program Assistance for Cancer Treatment (PACT). Within this program, the Czech Republic participates in the preparation of large-scale project of improvement of cancer finding, diagnostics and treatment in Montenegro;
- CZK 0.17 mil. for the support of the projects in the field of nuclear safety and radiation protection in European region;
- CZK 0.48 mil. for the support of new information system building for IAEA safeguards activities (last year of three-year project, co-financing of which was promised by the Czech Secretary of State for Foreign).

Regular contribution to the Technical Cooperation Fund, which is annually fixed according to UN methodology, amounts approximately to CZK 3.05 mil.

9.2.2. Other International Organizations and Associations

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

In 2006, SÚJB representatives took part in the activity of the Committee on Nuclear Regulatory Activities (CNRA) and all three working groups in the field of nuclear safety, the Committee on Radiation Protection and Public Health (CRPPH) and its working groups for International System on Occupational Exposure (ISOE), special working group established for monitoring and assessment of the development of prepared new recommendation of the International Commission on Radiological Protection (ICRP(EGIR)) and the working group on Nuclear Emergency Preparedness (NEM). The international forum on last proposal of this recommendation was organized on October 24 - 26, 2006 in Prague in cooperation with NEA/OECD and SÚJB.

The SÚJB also actively participated in the activity of the European ALARA Group - EAN (European Alara Network) and participates in the IAEA project for establishment of parallel ALARA Group for Central and Eastern European countries - RECAN.

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

The treaty has not entered into force due to small number of signatories. However, the Provisional Technical Secretariat builds up, in stages, the basic infrastructure for monitoring of the observance of the nuclear test ban. According to the wording of the treaty, four station systems (seismologic, sonar, infrasonic and radionuclide) may be used in addition to the main

purpose (nuclear explosion identification) for scientific purposes or as warning systems, e.g. for tsunami waves.

The seismologic monitoring station AS026 in Vranov near Brno operated by the Institute of Physics of the Earth of the Masaryk University in Brno is one of the stations operating under the CTBT. This station registered (due to its favourable position) the alleged experimental explosion executed by the Democratic People's Republic of Korea (KLDK) on October 9, 2006. With respect to gradual inadequacy of its equipment, the Institute of Physics of the Earth produced medium-term plan of investments intended for equipment recovery in 2006-2011. The SÚJB is considering the proposal in cooperation with the Ministry of Education, Youth and Sports.

In 2006, the SÚJB personnel participated in two sessions of the CTBTO Preparatory Committee Secretariat (in June and November) and five meetings of working groups A and B.

Western European Nuclear Regulators Association (WENRA)

The Western European Nuclear Regulators Association (WENRA) made a substantial step in the last year in its main activity - in harmonization of accesses to safety of nuclear facilities, radioactive waste and nuclear facility decommissioning. Early in 2006, the association released results of the work of two working groups (Working Group on Nuclear Reactor Safety and Working Group on Waste and Nuclear Facility Decommissioning), which evaluated the approach and criteria of nuclear safety assessment in European countries operating nuclear power reactors. The output involves reference levels for safety assessment both for power reactors and for nuclear waste, spent nuclear fuel and decommissioning of nuclear facilities. The reference levels, on which the members of the association agreed, are determined on the basis of new IAEA standards and in compliance with the best practice in member states of the association. Each country also compared the practice at nuclear power plants and the national legislation with determined the reference levels. The SÚJB informed about particular results for the Czech Republic on its websites. Together with the publication of reference levels, the association initiated open discussion with interest groups, international organizations operating in this field and other public. The objective is to gain feedback, which can lead to adjustment of reference levels where it will be considered to be justifiable.

SÚJB experts actively participated in the work of both groups; in the case of Working Group on Spent Fuel and Radioactive Waste, the SÚJB representative presides over the working group.

At the end of the 14th plenary meeting of the association held in mid November in Sweden, the SÚJB's Chairperson took over the control of the Association and became thus the first representative from new member states of the European Union, who took the lead of this organization for following three years.

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

A session of the forum was held in 2006 (June) in Jerevan. New two member states of the forum, Iran and India, participated in this session. The main subject of the session was, as usually, the activity of individual regulatory bodies and information about operational events at nuclear facilities and their solution. The most interesting contribution involved information on development of nuclear energy program in Russia and India. The Indian Nuclear Program involves nuclear units with 3.4 GW under construction and 5.7 GW in plans. The participants of the session approved the continuation of the activity of three working groups dealing with digital I&C systems of nuclear facilities (the Czech Republic is leading), the introduction of

probabilistic safety assessment into regulatory practice (Finland is leading) and operational event assessment and feedback (Bulgaria is leading).

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

The last meeting of the Network of Regulators of Countries with Small Nuclear Programs (NERS) was held in June 2006 in Slovenia. The main subjects for discussion focused this time on the following:

- Ageing and nuclear facility lifetime control,
- Role of surveillance in the control of radioactive sources,
- Surveillance in the field of radioactive waste,
- Role of surveillance in the transport of radioactive sources.

Similarly to other meetings, the information about operational events at nuclear power plants and their solution was exchanged during the meeting. The representative of the Czech Republic informed at the meeting about experience in inspection practice, about experience with the fuel at Temelín NPP and with the replacement of I&C system at Dukovany NPP.

9.2.3. UN Framework Conventions

Joint Convention of Safe Management of Nuclear Waste and Spent Nuclear Fuel

In 2006, the second Evaluation Conference of the Joint Convention of Safe Management of Nuclear Waste and Spent Nuclear Fuel was held in Vienna. The objective of the conference was to assess the fulfilment of the convention from the signatory countries. The presentation of the Czech Republic was accepted without reservation. The experts representing the Czech Republic responded both to 43 questions raised before the conference in writing and to all questions raised at the place during the conference.

9.3. European Union

The SÚJB's priority in the field in question, as in the previous year, to participate in the activities of working groups and committees of the Council and European Commission (EK), which address the problems falling within the competence of the Office, and preparation of standpoints for the meetings.

The SÚJB is responsible for the representation of the Czech Republic in the Council's Working Party on Atomic Questions (AQQ) and participate in the representation of the Czech Republic in the Working Party on Dual-Use Goods. In 2006, a total of 18 meetings of the AQQ were held. The main documents and discussed subjects were in particular:

- In the international area - draft agreements with Russia, China, Japan and Kazakhstan concerning the cooperation in the field of nuclear safety, and agreement on EURATOM participation in final phase of the KEDO project;
- Implementation of new approach of EURATOM in the field of implementation of nuclear safeguards. Further implementing document – Implementation of Safeguards System in the EURATOM (ITES) was prepared and discussed in the course of the year; its approval is expected in 2007;
- A draft of a directive on the supervision and control of shipments of radioactive waste and spent fuel. The directive was approved and published in the Official Journal – Council Directive 2006/117/Euratom of November 20 2006 on the supervision and control of shipments of radioactive waste and spent fuel;

- Document, which is a part of Instruments of Stability – Aid (to the third countries) in the field of nuclear safety, discussion of which was initiated in 2005 and has not been completed yet;
- The Interinstitutional Guidelines on Cooperation and Coordination in the framework of international conventions to which the Euratom and its Member States are parties. The document was approved on January 10, 2007 by the EU Council.

In linkage to the Action Plan on nuclear safety and management of spent fuel and radioactive waste, adopted in December 2004, three working sub-groups of the ad hoc Working Party on Nuclear Safety (WPNS) continued in the preparation of the report containing recommendation for further steps in the given fields (the representatives of SÚJB participated in meetings of two sub-parties and the WPNS). The report was approved by the AQG in December 2006 and subsequently acknowledged by the COR II. The discussion to individual recommendations will be initiated in 2007.

The positions presented to the documents discussed within the AQG, or the instructions for the meetings of the Czech Republic representatives in other working groups dealing with the Office's responsibilities, are approved by the Departmental Coordination Group on Nuclear Safety and Radiation Protection (RKS). In the course of 2006, this group held two meetings; however, its members are continuously consulted and acquainted in electronic form with the results of meetings of relevant Council's and Commission's working groups.

SÚJB representatives also participate in meetings of Commission's working groups dealing with problems related to radioactive waste management and shipments 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 SÚJB personnel are acquainted with results of 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, as required.

The SÚJB, in compliance with requirements of *acquis communautaire*, assured continuous data transfer to the Commission, i.e.:

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

In 2006, the SÚJB continued its participation in the EURANOS project carried out within the Euratom Framework Project and designed for development and implementation of the means for the forecast of radionuclide dispersion in the air in the case of radiation accident and for formulation of recommendations for protective measures. The SÚJB is a member of the Consortium of contractors 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 Decree No. 523 of May 4, 2005, the preparation of the SÚJB for the performance of the presidency in the EU Council has been launched.

9.4. PHARE Program

In the course of the year 2006, last four projects of PHARE proposed in the field of nuclear safety in the period before the accession of the Czech Republic to the European Union were completed. The subjects of the projects focused on the following:

- Development of guidance to perform non-destructive testing of selected welds of the primary circuit,
- Preparation of procedures for assessment of WWER reactor pressure vessel integrity, taking into account stainless steel linings,
- Specification of mechanical properties of irradiated materials of the of the WWER type nuclear reactors internals,
- Validation/verification of computer codes used in safety-related assessment of transition states and emergency situations.

SÚJB representatives take part in implementation of some TACIS projects. E.g. the project focused on support of the Armenian Nuclear Regulatory Authority (ANRA) in the field of security of high-active ionizing radiation sources and in organization of national infrastructure in the case of detection and findings of ionizing radiation sources. The preparation of participations in other projects is in progress.

In the course of 2006, the SÚJB representative took part in the preparation of last group and the evaluation of ongoing projects of the PHARE/TACIS programs within the PTEG and RAMG Working Groups. These programs have terminated (their mandate was limited in time) and they will be superseded by new financial mechanisms being launched in the course of the year 2007.

10. RESEARCH AND DEVELOPMENT

In 2006, the solution of the following projects was commenced within the programme "Research and Development Activities for the Needs of the State Office for Nuclear Safety as the State Regulatory Body and State Administration Body in the Fields of Nuclear Safety, Radiation Protection and Control of Adherence to the Prohibition of Chemical and Biological Weapons":

- Effect of warm pre-stressing (WPS) on reactor pressure vessel integrity during pressurized thermal shock events;
- Development and validation of the best estimate probabilistic method and nuclear power plant thermal-hydraulic model for deterministic safety analyses;
- Development, verification and introduction of the new procedures and methods of monitoring radiation situation and exposure of people, focusing on the evaluation of NPP effluent, environmental monitoring and express methods;
- Requirements for nuclear power plants long term operation;
- An elaboration of SÚJB methodology on qualification criteria selection;
- Burn-up credit and partial boron credit implementations in spent fuel pools at VVER reactors;
- The actual problems of radiation protection in medical exposure;
- Development and experimental verification of remedial measures against radon and gamma radiation in extreme conditions due to the finished historic exploitation of silver and uranium ore;
- Ensurance of tasks of the National Radon Programme resulting from the requirement to change the strategy of search and to evaluate its effectivity;

- Development and application of the measuring and diagnostic methods for evaluation of human exposure to natural radiation sources in the buildings;
- The study of behaviour of short-lived radon decay products in indoor air under the different ambient conditions in dwellings;
- Enhancement of personal dosimetry for workers in publicly accessible caves and in caves used for speleotherapy, with prospect to include other underground workplaces;
- Development and verification of effectivity of methods for monitoring of human exposure to selected mycotoxins from aflatoxins and trichothecens group abused within the framework of bioterrorism;
- Analysis of current economic and social aspects significant for radiation protection management;
- Optimisation study of wastewater release monitoring from nuclear power plant;
- Software for radiological impacts assessment to the territory of the Czech Republic in case of radiation accident in a foreign country.

In 2006, the following programme projects passing from the year 2005 were addressed within two running programmes "Research of Nuclear Safety and Radiation Protection for the Needs of the Regulatory Body" and "Research and Development for the Needs of the Regulatory Body in the Field of Supervision of the Prohibition of Chemical and Biological Weapons":

- Research and development of options reducing risks and consequences of severe accidents for Czech NPPs on the basis of advanced experimental and analytical methods;
- Determination of patient's radiation load in X-ray diagnostics;
- Biological agents and toxins or chemical substances confidence data collation;
- Research to improvement of biological agents and toxins.

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

- Study of material and personal factors for personal protection against chemical and biological agents, including their detection and identification;
- Study of part of exposure caused by natural radioactivity.

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

Pursuant to Act No. 106/1999 Coll., on free access to information, a total of 22 applications were submitted in writing to the State Office for Nuclear Safety in 2006 from physical or legal entities with respect to the provision of information. This number again shows a significant decline against the previous years (two tens of inquiries against hundreds of inquiries in the previous years). The same trend may be also substantiated for responses to oral inquiries made on a telephone or personal basis.

In the course of 2006, two judgements were delivered on the merits related to observance of this act. Both cases concerned disputes of the same prosecutor, i.e. the citizens' association Citizens Initiative for Environmental Protection. The courts dismissed both actions (cassation complaint to the Supreme Administrative Court and the action to the Municipal Court). Office's own personnel provided services related to procuration; no other expenses incurred to the Office.

Two complaints were lodged to SÚJB in the monitored period pursuant to Section 16a of Act No. 106/1999 Coll., and that is:

- Citizens' association's complaint "In the Emergency Zone of Temelín Nuclear Power Plant" on information providing in the form of list of decisions made by ČSKAE and SÚJB related to Temelín nuclear power plant and on decision on failure to provide information in the form of some documentation. The complainant raised an objection to insufficiency of the lists provided and to failure to receive advised decision on failure to provide information. The complaint was settled with the conclusion that SÚJB procedure is confirmed. Some SÚJB procedures were partially explained; the original information provided by SÚJB was partially completed and the service of decision on failure to provide information was documented.
- Citizens' association's complaint "In the Emergency Zone of Temelín Nuclear Power Plant" on information providing in the form of responses to 5 questions related to Temelín nuclear power plant operation. A part of the questions was responded and decision on failure to provide information was issued to a part of the questions. The complaint was directed against the range of responses and furthermore to failure to receive advised decision by the complainant. When settling the complaint, the SÚJB confirmed the correctness of complaint settlement procedure, including documentation of the delivery of the decision on failure to provide information.

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:

- Problems related to nuclear power plant operation with stress put on Temelín NPP; decline in number of these requests was very significant both from public side and from media side. The public side is limited only to citizens' associations, and in terms of media, the SÚJB is primarily contacted by two national daily papers, and other papers usually adopt the newscast of the Czech News Agency (ČTK);
- Problems related to radiation protection and radiation situation monitoring on the territory of the Czech Republic; however, number of requestors of information is on minimum level especially due to availability of basic data on SÚJB website;
- Other general information (e.g. on the Radon Program and methodology for providing the government subsidies, on texts of the Atomic Act and decrees, on the problems related to chemical and biological protection) represented only minimum part in total number of requests, also due to the fact that the majority of potential responses and other information is permanently available on SÚJB website.

Therefore, it is apparent that the contact with public is especially made through SÚJB website www.sujb.cz these days. 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 both 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 website offers also a number of documents and reports from the fields, on which the Office concentrates. The Czech Republic's National Report executed for the needs of the Convention of Nuclear Safety or Annual Reports presented to the Government of the Czech Republic, information for international negotiations within the scope of bilateral and multilateral relations may be given as examples. If required, the events that occurred in nuclear power plant operation, in the field of radiation protection and radiation situation monitoring on the

territory of the Czech Republic are commented in an understandable manner. In doing so, the Office is always trying to prove and explain to the public that in spite of often incorrect and unclear media descriptions of events (for the most part, incorrectly evaluated as failures important for nuclear safety), all power plant safety systems functioned reliably, correctly and in time as well as in compliance with predetermined maximum allowable values of deviations and intervention times. In 2006, the communication with public in these fields focused on explanation of questions concerning:

- Technical problems related to construction, function and use of Westinghouse fuel type on both units of Temelín NPP and on explanation of allowability of certain volume strains of fuel as well as its leakage during operation;
- Problems related to complete insulation of the containment in case of occurrence of emergency conditions and impacts of failure to close the post-accident sampling routes;
- Results of tests of managing bodies and explanation of allowability of non-seating of the so-called clusters in bottom working positions in relation to allowable limit values of this phenomenon in operation;
- Boric acid overflow calling considerable media attention;
- Extension of the permit to operate Unit 2 of Dukovany NPP on a permanent basis;
- Escapes of gaseous and liquid substance at Temelín NPP;
- Activities, reconstructions and gradual replacement of safety valves at Temelín NPP.

In 2006, the form of conference conducted on the above mentioned SÚJB website was also used.

In addition to data of the above mentioned method of information and report publishing, SÚJB representatives provided further information in their appearances in media.

The work on optimum SÚJB information system interface with state administration information portal operated by the Ministry of Information of the Czech Republic continued in 2006.

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 may obtain detailed information both on the content and on the possibilities of acquisition of periodicals on the SÚJB web page as well as at the publisher address, i.e. Nuclear Information Institute, Eliška Přemyslovna street, Prague 5 - Zbraslav.

12. ACTIVITY OF THE NATIONAL INSTITUTE FOR NUCLEAR, CHEMICAL AND BIOLOGICAL PROTECTION

In 2006, the National Institute for Nuclear, Chemical and Biological Protection was a contributory organization established by the State Office for Nuclear Safety. Its activity was mostly financed from the state budget and partially covered by revenues from expert activities. In 2006, the SÚJCHBO was assigned 57 job positions to ensure its activity.

The main mission of the 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 of the SÚJCHBO involves the support of supervisory activities carried out by SÚJB inspectors in the divisions of radiation protection and non-proliferation of weapons of mass destruction. The SÚJCHBO also performs training and education activity. Training courses focused on protection against warfare agents are organized on a regular basis in the Institute for Public Protection of the Ministry of Interior seated in Lázně Bohdaneč in cooperation with the ministry, SÚJB and Technical Secretariat of the Organization for the Prohibition of Chemical Weapons.

The components of the Ministry of Interior also use the SÚJCHBO mobile laboratory in specialized interventions within the Integrated Rescue System (IZS) of the Czech Republic.

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

In 2006, the preparation for the change in organization legal form was commenced. In compliance with Act No. 341/2005 Coll., on public research institutions, a number of steps towards SÚJCHBO changeover to public research organization on January 1, 2007 were taken.

12.1. Field of Nuclear Protection

The division workplace dealt with the tasks within the "Radon Program of the Czech Republic" by performing personal dosimetry for the state-owned enterprise s.p. DIAMO and radiation monitoring in the vicinity of existing and former workplaces of uranium mining in the Czech Republic as well as by performing radiochemical and gamma-spectrometric analyses.

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

12.2. Field of Chemical Protection

The main activity of division workplaces consisted in performance of accredited and non-accredited tests (extensive resistance tests of materials designed for manufacture of protective clothing and means against chemical substances were performed), development of new methods for improving the quality of accredited tests, technical support of supervisions carried out by SÚJB inspectors, identification of unknown samples brought to the SÚJCHBO by members of the Integrated Rescue System (IZS) and monitoring of external and internal environment when holding all-society significant actions. The personnel also participated in solutions of a number of various emergency situations in the field (using mobile laboratories). In 2006, a new phenomenon occurred in division activity – at the request of state administration bodies, division personnel participated in monitoring and improvement work in identifying hazardous chemical substances detected in several illegal storage facilities on the territory of the Czech Republic.

12.3. Field of Biological Protection

There are two specialized workplaces included in this division. The Laboratory for Human Monitoring in Extreme Conditions focused on expertises and testing of protective equipment, clothing and human in extreme climatic conditions used primarily the workplace of climate control chamber with the setting of microclimatic parameters (from -50 to +100°C) and defined physical load. The 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 2006, the workplace primarily dealt with detection of such agents in findings with unknown content brought to the SÚJCHBO for identification. An important task was also provision of supervisory support for SÚJB inspectors in this field.

12.4. Supervisory Support

The workplace providing assistance to SÚJB inspectors dealing with uranium mining is located at Kamenná and at Dolní Rožínka. Its activity in 2006 focused primarily on performance of measurements, sampling and analyses thereof. The workplace also ensures the operation of air monitoring point of the Radiation Monitoring Network.

12.5. Research and Development

In 2006, the expert workplaces of the 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 within the programmes of the SÚJB, the Ministry of Industry and Trade and the Ministry of Defence.

International Research Project IMPACT

The SÚJCHBO participated in the pilot project IMPACT aimed at laying the basis for scientific-research program of EU countries in 2007-2012, focused on detection of substances that can be abused for the use in weapons of mass destruction (chemical, biological, radiological and nuclear substances) and on elimination of effects of terrorist attacks with the use of such substances.

This project was terminated as of December 31, 2006 and SÚJCHBO personnel participated in execution of final documents:

- D 200.3 Operational concept and main requirements on first intervening rescuers
- D 500.2 Operational requirements, review and evaluation of advanced equipment for first intervening rescuers in the EU
- D 500.3 Improvement of technical equipment of rescuers with consideration of financial needs
- D 600.1 Review of requirements related to personal and material decontamination
- D 600.2 Evaluation of current situation in the field of decontamination and draft solution for improvement of current situation
- D 800.1 Review of existing procedures for sampling of chemical, biological and radioactive substances
- D 800.3 Means of analyses of samples suspected of content of chemical, biological and radioactive substances.

12.6. Other Activities of SÚJCHBO

Other activities of the SÚJCHBO involve activities resulting from SÚJCHBO involvement in 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. In 2006, the personnel of chemical and biological protection divisions participated in several collaboration exercises 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 SÚJCHBO and the University of South Bohemia in České Budějovice on establishment of Clinical Workplace) and the Technical University – Faculty of Safety Engineering in Ostrava. Courses for members of the Fire Rescue Service and the Police of the Czech Republic focused on protection against chemical and biological terrorism, and courses for personnel handling ionizing radiation sources were conducted. The international cooperation with the TNO Haag, Netherlands continued in 2006; the contractual relations were renewed in the course of the year and the activity continues developing. The cooperation with the respective laboratories in the Federal Republic of Germany was established in the field of radon metrology.

The SÚJCHBO, within the activities coordinated by the SÚJB, continued providing support to OPCW in Haag in 2006.

Detailed information on SÚJCHBO activity is included in the annual report of the Institute available on the website www.sujchbo.cz.

13. ACTIVITY OF THE 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 SÚRO activities is stipulated in detail by the Statute of November 15, 1995. SÚRO basic function is to provide expert, methodical, educational, information and research activities related to the support of the state administration performed by the SÚJB in radiation protection matters.

The main activities of the SÚRO may be brought down into several fields:

- Monitoring 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;
- Medical exposure, i.e. use of ionizing radiation sources in radiodiagnostics and radiotherapy; including operation assurance;
- Natural sources, i.e. monitoring and evaluation of population exposed to natural radionuclides (especially radon) and radiation risk assessment.

In 2006, the SÚRO significantly participated:

- In providing RMS permanent and emergency staff. It ensured in particular the operation of the RMS Central Laboratory, central workplaces of RMS Information System (IS), mobile groups and cooperated on operation of the Air Group;
- In providing support of SÚJB Crisis Staff activity;
- In organization of comparison measurements and exercises of RMS components;
- In independent monitoring of effluents of nuclear-power facilities;
- In execution of laboratory analyses for supervisory needs;

- In implementation of European projects "RODOS" and "EURANOS" in the Czech Republic, processing and transfer of data from RMS within the Czech Republic to REM database and continuous transfer of data from the Early Warning System to EURDEP/ECURIE database;
- In monitoring of exposure of population, personnel with ionizing radiation sources, including nuclear facility personnel;
- In monitoring and analysis of public exposure from natural sources (tasks specified within the so-called Radon Program);
- In 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;
- In tests of special professional qualifications; in check of documentation for permitting activities specifically important from the radiation protection point of view and in inspection of companies providing measurements in the field of radiation protection;
- In monitoring and assessing the risk of occupational disease as a result of ionizing radiation exposure;
- In public information on radiation situation in the Czech Republic.

13.1. Research Activity

A significant part of SÚRO activities was the research and development activity. The subjects of SÚRO research projects followed the needs of the field of radiation protection according to the specification of the founder required in practice as well as the long-term conceptual development of the field.

Completed research and development projects were defended during 2006:

- "Analysis and processing of selected data required for development and verification of software used for assessment of radiological consequences of serious accidents";
- "The analysis of topical problems in radiation protection concerning exposure of the Czech population to ionising radiation";
- "Determination of patients' radiation load in X-ray diagnostics".

In 2006, the solution of five new projects was commenced:

- "Development, verification and introduction of the new procedures and methods of monitoring radiation situation and exposure of people, focusing on the evaluation of NPP effluent, environmental monitoring and express methods";
- "The actual problems of radiation protection in medical exposure";
- "Performance of tasks of the National Radon Programme resulting from the requirement to change the strategy of search and to evaluate its effectiveness";
- "Development and application of the measuring and diagnostic methods for evaluation of human exposure to natural radiation sources in the buildings";
- "The study of behaviour of short-lived radon decay products in indoor air under the different ambient conditions in dwellings".

In addition to the above mentioned projects, the SÚRO participated in solution of other national or international projects:

- IGA – MZ: "Interaction analysis of environmental and behavioral risk factors of lung cancer in view of preventive approaches in the national health sector", (IGA NR/8411-3/2005);

- GAČR: "Utilization of ionizing radiation in dosimetry and radiological physics", (202/05/H031);
- EU project "Quantification of cancer and non-cancer risks associated with multiple chronic radiation exposures: epidemiological studies, organ dose calculation and risk assessment", (STREP, Project No. 516483 FI6R);
- IAEA - Coordinated Research Project: "Testing of Implementation of the Code of Practice for Dosimetry in X-Ray Diagnostic Radiology", research contract no. 13424/RBF).

In the field of training and education, the SÚRO cooperates with universities in implementation of study programmes, including doctoral programme (in particular, specialists of nuclear fields as well as doctors), inspector education. Furthermore, in cooperation with SÚJB and IAEA ensured the expert part of the fellowships for foreign participants and provided expert consultations to the personnel of state authorities and public.

Detailed description of SÚRO activities, including result 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 website – www.suro.cz, and in Part II to this Annual Report.

14. USED ABBREVIATIONS AND ACRONYMS

AQG	Atomic Questions Group
AV ČR	Academy of Science of the Czech Republic
BTWC	Biological and Toxic Weapons Convention
CDLE	Central Database of Medical Exposure
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
CZSP	IAEA Member States Support Program
ČIA	Czech Accreditation Institute
ČLS JEP	Czech Medical Association of J. E. Purkyně
EK	European Commission
EU	European Union
FJFI ČVUT	Faculty of Nuclear Science and Physical Engineering of the Czech Technical University in Prague
HZS	Fire Rescue Service
INES	International Nuclear Event Scale
IOO	Institute for Population Protection, Lázně Bohdaneč
IS	Information System
IZ	Ionizing Radiation
IZS	Integrated Rescue System
JE	Nuclear Power Plant
KKC	Emergency Response Centre
KŠ	Crisis Headquarters
LaP	Safe Operation Limits & Conditions
LRKO	Laboratory for Monitoring of Environment Radiation
MAAE	Czech equivalent of IAEA (International Atomic Energy Agency)
MBA	Material Balance Area
MF	Ministry of Finance of the Czech Republic
MMKO	Air Monitoring Point
MO	Ministry of Defence
MPO	Ministry of Industry and Trade of the Czech Republic
MS	Mobile Group
MSPV	Interim Spent Nuclear Fuel Storage Facility
MŠMT	Ministry of Education, Youth and Sports
MV	Ministry of Interior 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
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	Non-Proliferation Treaty (Treaty on the Non-Proliferation of Nuclear Weapons)
OAR	Radon Activity Concentration

OECD	Organization for Economic Cooperation and Development
OPCW	Organization for the Prohibition of Chemical Weapons
OSS	Organizational State Component
PACT	Program Assistance for Cancer Treatment
PČR	Police of the Czech Republic
PSR	Periodic Safety Review
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 Centre
RMS	Radiation Monitoring Network
ROR	Reactor Scram
RRRFR	Russian Research Reactor Fuel Return
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
SVP	Spent Fuel Storage Facility
SVZ	Early Warning System
SZÚ	National Institute of Public Health
TLD	Thermoluminescent Dosimetry
URZ	Sealed Radionuclide Sources (of radiation)
ÚFZ	Institute of Physics of the Earth
ÚJF ČAV	Nuclear Physics Institute of the Academy of Science of the Czech Republic
ÚJV Řež, a.s.	Nuclear Research Institute in 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
VZP	General Health Insurance Company
VÚV T.G.M. Praha	T. G. Masaryk Water Research Institute in Prague
WENRA	Western European Nuclear Regulators Association
WPNS	Working Group for Nuclear Safety
WPS	Warm Pre-Stressing
WWER Forum	Forum of the State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors
ZHN	Weapons of Mass Destruction
ZIZ	Ionizing Radiation Source