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REVIEW TEAM (IRRT)

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INTERNATIONAL REGULATORY REVIEW TEAM
conducted under IAEA Technical Co-operation Project RER/9/061:
Enhancement of Nuclear Safety Regulatory Authority Effectiveness

DEPARTMENT OF TECHNICAL
CO-OPERATION
Division for Europe, Latin America and
West Asia

DEPARTMENT OF NUCLEAR SAFETY
Division of Nuclear Installation Safety and
Division of Radiation and Waste Safety

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FOREWORD

by the

Director General

The IAEA International Regulatory Review Team (IRRT) programme assists Member States to enhance the organization and performance of their nuclear safety regulatory body. Such a regulatory body must work within the framework of its national legal system which in turn should ensure both the independence and the legal powers available to the regulatory body. Additionally the national administrative and legislative system should ensure that the regulatory body has sufficient funding and resources to carry out its functions of reviewing and assessing safety submissions; licensing or authorizing nuclear safety activities, establishing regulations and criteria; inspecting nuclear facilities and enforcing national legislation. The regulatory body should be resourced and staffed by capable and experienced people to a level commensurate with the national nuclear programme. IRRT missions focus on all these aspects in assessing the regulatory body's safety effectiveness. Comparisons with successful practices in other countries are made and ideas for improving safety are exchanged at the working level.

An IRRT mission is made only at the request of a Member State. It is not an inspection to determine compliance with national legislation, rather an objective review of nuclear regulatory practices with respect to international guidelines. The evaluation can complement national efforts by providing an independent, international assessment of work processes that may identify areas for improvement. Through the IRRT programme, the IAEA facilitates the exchange of knowledge and experience between international experts and regulatory body personnel. Such advice and assistance will enhance nuclear safety in all nuclear countries. An IRRT mission is also a good training ground for observers from newly formed regulatory bodies in developing countries who follow the evaluation process. This approach, based on voluntary co-operation, contributes to the attainment of international standards of excellence in nuclear safety at the regulatory body level.

Essential features of the work of the IRRT experts and their regulatory body counterparts are the comparisons of regulatory practices with international guidelines and best practices, and a joint search for areas where practices can be enhanced. The implementation of any recommendations or suggestions, after consideration by the regulatory body, is entirely voluntary.

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The number of recommendations, suggestions and good practices contained in this report is in no way a measure of the status of the regulatory body. Comparisons of such numbers between IRRT reports from different countries should not be attempted.

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TABLE OF CONTENTS

| | |
|--|----|
| SUMMARY..... | IV |
| INTRODUCTION | VI |
| 1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES | 7 |
| 2. AUTHORITY, RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY . | 12 |
| 3. ORGANIZATION OF THE REGULATORY BODY | 18 |
| 4. AUTHORIZATION PROCESS | 22 |
| 5. REVIEW AND ASSESSMENT..... | 26 |
| 6. INSPECTION AND ENFORCEMENT | 31 |
| 7. DEVELOPMENT OF REGULATIONS AND GUIDES | 37 |
| 8. EMERGENCY PREPAREDNESS | 39 |
| 9. RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING | 42 |
| 10. RADIATION PROTECTION | 49 |
| 11. TRANSPORT OF RADIOACTIVE MATERIAL..... | 57 |
| APPENDIX I GOVERNMENTAL STRUCTURE..... | 72 |
| APPENDIX II INTERFACES LICENSING AND PERMIT PROCESS | 73 |
| APPENDIX III SÚJB ORGANIZATIONAL STRUCTURE..... | 74 |
| APPENDIX IV IRRT ADVANCE REFERENCE MATERIAL ACTS AND DECREES..... | 75 |
| APPENDIX V SÚJB DIRECTIVES/PROCEDURES (VDS) AND INSTRUCTIONS (VDMI) | 77 |
| APPENDIX VI GUIDES ISSUED BY SUJB TO THE LICENSEES | 84 |
| SÚJB GUIDELINES (BLUE LINE) | 84 |
| APPENDIX VII SYNOPSIS OF RECOMMENDATIONS, SUGGESTIONS AND GOOD | |
| PRACTICES | 87 |
| APPENDIX VIII PROGRESS WITH RESOLVING RECOMMENDATIONS AND | |
| SUGGESTIONS FROM THE FEBRUARY 2000 REDUCED SCOPE IRRT | 92 |
| APPENDIX IX TEAM COMPOSITION | 95 |

RESTRICTED

SUMMARY

At the request of the Czech Government authorities, an IAEA team of twelve experts including two observers visited the State Office for Nuclear Safety (SÚJB) to conduct a full scope International Regulatory Review Team (IRRT) mission. The purpose of the mission was to review the effectiveness of the regulatory body of the Czech Republic and to exchange information and experience in the regulation of nuclear, radiation, radioactive waste and transport safety. The team carried out interviews with the staff of SÚJB, the senior staff of NPP Dukovany, the Nuclear Research Institute (ÚJV) in Rez, the Chairman of the Advisory Committee on Nuclear Safety and senior representatives of the National Radiological Protection Institute (SÚRO) and staff at a number of radiation facilities in Prague and Kutna Hora.

Since the establishment of SÚJB in 1993, substantial progress has been made in achieving the qualities required by a strong independent and competent regulatory body consistent with international practice. In particular there is a sound legal basis for the independence, authority, responsibilities and functions of the regulatory body consistent with best international practice. The SÚJB has achieved “de jure” and “de facto” independence. The IRRT team noted that the SÚJB has a staff of motivated and dedicated people with competencies in the areas of their responsibility. The SÚJB has taken the initiative to improve its effectiveness through:

- a self-assessment of its regulatory processes;
- the development of a comprehensive system of guidelines;
- the development of a new staff training programme and;
- strengthening its role and capabilities in emergency preparedness.

The review team concluded that the following items should be priorities because they were identified in several review areas, or because the reviewers consider that they will have the most significant positive effect in further improving the performance of the SÚJB through:

- expansion of SÚJB’s inspection plan to cover the licensee’s audit/self-assessment programme and the licensee’s processes;
- formalizing the arrangements for witnessing and commenting on the adequacy of emergency preparedness exercises at NPPs;
- requiring periodic exercises of the approved emergency plans for certain radiation practices and or activities;
- further strengthening of its capabilities for assessment of safety culture and human factors and in the use of probabilistic safety analysis consistent with developments in international practice and;
- completion and implementation of the electronic database for SÚJB decisions.

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The reviewers identified a number of good practices that have been recorded for the benefit of other nuclear regulatory bodies. They also made recommendations and suggestions that indicate where improvements are necessary, or desirable to further strengthen the regulatory body in the Czech Republic. In the majority of cases the recommendations and suggestions are concerned with the longer-term development of the organisation and build on current practices and achievements. In the remaining cases there is no specific urgency or safety concern.

SÚJB staff put a considerable effort into the preparation of the mission. During the review the team was extended full co-operation during technical discussions with SÚJB personnel and the organization and administrative support was excellent. SÚJB counterparts were enthusiastic and interested in obtaining international advice and team members appreciated the opportunity to identify lessons for their own organisations from SÚJB practices.

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INTRODUCTION

At the request of the Czech Government authorities, an IAEA team of twelve experts including two observers visited the State Office for Nuclear Safety (SÚJB) to conduct a full scope International Regulatory Review Team (IRRT) mission. The purpose of the mission was to review the effectiveness of the regulatory body of the Czech Republic and to exchange information and experience in the regulation of nuclear, radiation, radioactive waste and transport safety in the following specific predetermined areas: legislative and governmental responsibilities; authority, responsibilities and functions of the regulatory body; organization of the regulatory body; authorization process; review and assessment; inspection and enforcement; development of regulations and guides; emergency preparedness; radioactive waste management and decommissioning; radiation; and transport safety.

The review was conducted from 4 to 15 June 2001. Before taking part in the mission the experts reviewed the Advanced Reference Material provided by SÚJB. During the mission, a systematic review of the predetermined areas was completed using responses to the questionnaire provided prior to the mission, interviews with staff and direct observation of working practices. SÚJB made available to the team a large number of legal, regulatory and internal documents in English. Case studies were presented to the reviewers to describe the work of SÚJB and assist understanding of working practices.

Most of the IRRT activities took place at the SÚJB offices in Prague. During the mission five experts observed inspection practices during a visit to the Dukovany nuclear power plant, the radioactive waste repository and the interim spent fuel storage facility. Two experts visited the department of nuclear medicine at Hospital Na Homolce (Prague), department of radiotherapy at the Hospital for Child Oncology at University Hospital Motol, the irradiator facility at enterprise Artim s.r.o. and an industrial radiography practice at the CKD foundry at Kutná Hora. Inspection and radiation safety and transport safety practices were reviewed during a visit to the Nuclear Research Institute (ÚJV) at Rez covering the research reactor, isotope production, waste management, packaging and transport facilities. Members of the team spent time with the senior staff of NPP Dukovany and Nuclear Research Institute (ÚJV) at Rez, the Chairman of the Advisory Committee on National Safety and senior representatives of the National Radiological Protection Institute (SÚRO).

In carrying out the review the team recognized that SÚJB was established in 1993 and has taken many steps to develop its regulatory system within a short time-scale to ensure effective regulatory supervision of nuclear facilities in the Czech Republic.

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1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES

Experts: Alfred Schröder and Vesselina Rangelova

1.1. GOVERNMENTAL STRUCTURE

The Czech Republic became an independent sovereign state on January 1st 1993. It has an elected Parliament, which adopts laws and a governmental system to implement legislation. Within the Government there are 14 Ministries and 8 State Offices, one of them is the State Office for Nuclear Safety - Státní Úrad pro Jadernou Bezpecnost (SÚJB), see Appendix I.

According to the Czech constitutional law and the Act 18/1997 Coll. “Peaceful Use of Nuclear Energy and Ionizing Radiation” (hereinafter the Atomic Act), the SÚJB is the regulatory body and the only state office responsible for governmental administration and supervision in respect to the safety of nuclear facilities, the safe use of sources of ionizing radiation, radiation protection, the safe management of radioactive waste and the safe transport of radioactive material.

The Constitutional Law sets the legal prerequisites for the independence of the regulatory body in the Czech Republic. By this law the SÚJB is a fully independent body in the structure of authorities of central administration and reports directly to the Government. The Chairman of the SÚJB has direct access to the Governmental sessions, when matters related to nuclear safety or other responsibilities of the Office are discussed. In all other cases, administrative and information channel to the Government is via the Vicepremier for Social Affairs.

With the SÚJB the following Ministries are involved, either directly or through the Governmental bodies acting within them, in regulation and control of the other aspects related to these activities:

- Ministry of Environment;
- Ministry of Interior;
- Ministry of Health Care;
- Ministry of Social Affairs;
- Ministry of Transport and Communications and;
- Ministry of Industry and Trade.

The Ministry of Environment is responsible for evaluating the Environment Impact Assessment. The Ministry of Interior has the authority in the areas of conventional fire protection, the Ministry of Social Affairs, through industrial safety inspection has the authority in the areas of conventional safety, the Ministry of Transport and Communications implements requirements promulgated by international modal organizations (see Chapter 11) and the Ministry of Industry and Trade establishes the criteria for third part liability.

Although the SÚJB is the only responsible regulatory authority with respect to nuclear and radiation safety, according to the Act No. 50/1976 Coll. “Land Planning and Construction Regulations”, (hereinafter the Construction Act) the major licenses (for siting, construction, operation, decommissioning) are issued by the district

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authority, based on approvals of other bodies of state control and regulation, including the SÚJB, see Appendix II. The district authority needs to have SÚJB's positive consent to issue the license.

The public and other bodies are not party to the licensing process according to Atomic Act. The public and other bodies are parties of the process on environmental impact assessment only according to Act No. 244/1992 Coll. "Environmental Impact Assessment" in the case of siting and decommissioning. However, the public has the right to raise any questions about the work of the SÚJB (as is the case for any part of the state administration) according to Act No. 106/1999 Coll. "Free Access to Information".

1.2. LEGISLATIVE FRAMEWORK

The legislation currently in force in the Czech Republic is based on legal provisions of the former Czechoslovakia, complemented with subsequent provisions promulgated by the Czech Republic Parliament, (through the constitutional Act on "Enforcement of the Basic Constitutional Charter on the Autonomy and Independence of Czechoslovakia". According to this constitutional Act all the laws of the former Federation of Czechoslovakia, if not in conflict with the Czech Republic legal system, remain in force until the promulgation of new legislation by the Czech Republic Parliament.

The legislative process, regulating the industrial utilisation of nuclear energy, was launched by the amendment to the Construction Act and its implementing Decrees No. 83/1976 Coll., "Construction Documentation" and No. 85/1976 Coll., "More Detailed Regulation of Area Management and Construction Regulations". The Construction Act established that the construction of a nuclear installation required the special approval of the regulatory body.

Act No. 28/1984 Coll. "State Supervision of Nuclear Safety at Nuclear Installations", (hereinafter State Supervision Act), was the last part in this first part of the legislative framework for nuclear safety assurance in the Czechoslovakia Republic. The State Supervision Act established that the body, which exercised the state supervision of nuclear safety, would be independent from the manufacturers and operators of nuclear installations.

"that responsibility for nuclear safety of a nuclear installation bears its Constructor, resp. Operator (Responsible Organisation)".

The current legislative pyramid for the safe regulation of nuclear facilities and activities in the Czech Republic consists of:

- Act No. 18/1997 Coll. "Peaceful Utilisation of Nuclear Energy and Ionising Radiation" (Atomic Act);
- A set of 14 implementing Decrees (regulations) covering all safety related areas (siting, construction, operation, decommissioning, radiation protection, radioactive wastes management, emergency planning etc.);
- Regulatory guides, prepared on the ad-hoc basis according to the needs of regulatory activities.

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There are a number of additional Acts, which complete the legal framework in this area, e.g. Construction Act, Environmental Impact Assessment Act, Act on Administrative Procedure, and others.

On 24th January 1997 the Parliament of the Czech Republic passed the Atomic Act with it coming fully into force from July 1997. Accordingly Article 1 of the Atomic Act states that it regulates the:

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

The Atomic Act is a modern atomic law that addresses all aspects related to the regulation of the safe use of atomic energy in accordance with best international practices.

The Atomic Act authorizes the SÚJB to issue Decrees that set out how the requirements of the Atomic Act should be met.

The Atomic Act has provisions that define liabilities in respect of nuclear damage and provisions of financial security in respect of any liability. Financial provisions for waste and decommissioning are also established in this Act as protection against natural and other disasters, which regulate emergency preparedness and the implementation of the requested protective measures in case of nuclear accidents.

Amendment of the Atomic Act and its decrees is currently being undertaken to bring the legislative framework in line with EU practice.

The Acts and Decrees are listed in Appendix IV.

1.2.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS document DS 248 draft 10 on “Review and Assessment of Nuclear Facilities by the Regulatory Body” states in §516 that “*the regulatory body should indicate to the operator the period of time considered necessary for the review and assessment process, so as to facilitate the process and minimize delays in granting of any necessary authorizations. The regulatory body should exert its best efforts to complete its review and assessment process within the tentatively agreed schedule, but this objective should in no way compromise the regulatory body’s responsibility*”.

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The fixed time periods for issuing permits and approvals in Article 14 of the Atomic Act could potentially restrict the time available for the regulatory decision to be completed. In practice it is recognized that the SÚJB is able to control the timely supply of submission of assessment material from the licensee, such that only the formal issuing of the permit requires a specific time. In the longer term in order to align the Atomic Act with IAEA guidance, a revision of Article 14 might be considered.

- a) **Recommendation: In future revisions of the Atomic Act the SÚJB should advise Government and the Parliament on the need for amendment of Article 14, and in particular paragraph 14.3(d), necessary to eliminate any time constraints on the regulatory body decision making process.**

1.3. INDEPENDENCE OF THE REGULATORY BODY

As mentioned earlier in Chapter 1.1 the Constitutional Law establishes all the legal prerequisites for the independence of the regulatory body in the Czech Republic.

There is clear separation between the responsibilities and functions of the SÚJB and those organizations or bodies that are charged with the promotion or use of nuclear installations or activities.

There is a direct reporting line of the SÚJB Chairman to the Government. The Chairman has direct access to the Governmental sessions, when matters related to nuclear safety or other responsibilities of the office are discussed. The SÚJB Chairman has reported a number of times (e.g. since January 2000 thirteen times) to the Government in recent years and has not experienced any political pressure regarding the regulatory body decisions. It appears that the political changes in the country also do not affect the work of the office, since the SÚJB chair is not a political post. In the past the Chairman of the SÚJB has not been changed following any of the political elections in the country.

The SÚJB has the authority to communicate independently its regulatory requirements, decisions and opinions and their basis to the public. The arrangements made by the office on this matter ensure that this authority is discharged in an effective way (see Chapter 2.4).

In addition to the legal and political independence, the financial independence of the office is ensured through the state funding mechanisms. The SÚJB budget is defined every year in the frame of the State Budget allocated to general state administrations. SÚJB drafts a budget proposal and presents it to the Government for consideration. The final State budget approval is with the Czech Parliament. In recent years the SÚJB did not experience difficulties in planning and receiving from the State budget the financial resources it needed. The office funding was adequate and ensured that the SÚJB had enough funds to discharge its assigned responsibilities.

It was recognized by the experts, that the SÚJB also has authority and financial resources within its budget to initiate research and development work, as necessary to support its activities. Moreover, the SÚJB has access to additional funds, part of a special item in the State Budget, in case of unforeseen circumstances requiring some extra expertise or research to be done. The part of the SÚJB budget allocated for R&D cannot be spent for any other purposes. In the view of the experts, the SÚJB has

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implemented an effective mechanism to define the research and development needed to ensure that its competence and knowledge is maintained at state-of-the art level.

In the view of the experts, SÚJB has no authorities or functions assigned which may jeopardize its regulatory responsibility and independence. A proven mechanism exists to ensure that SÚJB fulfils its statutory obligations and provides effective control of nuclear, radiation, radioactive waste and transport safety in the Czech Republic. The regulatory body judgements can be made, and enforcement actions taken, without pressure from interests that may conflict with safety.

1.3.1. Good Practices

- (1) **BASIS:** IAEA SSS No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §2.2(2) that *“A regulatory body shall be established and maintained which shall be effectively independent of organizations or bodies charged with the promotion of nuclear technologies or responsible for facilities or activities. This is so that regulatory judgements can be made, and enforcement actions taken, without pressure from interests that may conflict with safety“.*

- a) **Good practice:** The Czech Government has established all legal prerequisites for and found the effective mechanisms to ensure “de jure” and “de facto” the independence of the SÚJB.

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2. AUTHORITY, RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

Experts: Vesselina Rangelova and Alfred Schröder

2.1. REGULATORY AUTHORITY

The SÚJB was established on 21.12.1992 by law of the Czech National Council No. 21. In July 1996 the SÚJB's span of control was extended by Act No. 85/1995 Coll. to include the areas of protection against ionising radiation. The SÚJB became an integrated body of the state administration carrying out the supervision of the whole area of the utilisation of nuclear energy and ionising radiation. In 1997 with the promulgation of the Atomic Act according to Article 3 the:

“State administration and supervision of the utilisation of nuclear energy and ionising radiation and in the field of radiation protection shall be performed by the State Office for Nuclear Safety”.

SÚJB's main authorities are described in the corresponding articles of the Atomic Act (AA), Act No. 2/1969 Coll. “Distribution of Competencies within the State Administration” (ASA) [Ref. 6 in Appendix IV], Act No. 71/1967 Coll. “General Administrative Procedures” (AAP) [Ref. 7 in Appendix IV], or other relevant legislative acts, as follows to:

- develop safety principles and criteria (ASA, AAP, AA §3);
- establish regulations and issue guidance (ASA, AAP, AA §2, 3, 4, 6, 7, 8, 9, 13, 14, 17, 18, 20, 22, 23, 24 and 34 and Appendix of the AA);
- require any operator to conduct a safety assessment (AA §13(d));
- require that any operator provide it with any necessary information, including information from its suppliers, even if this information is proprietary (AA §3(d), §13(8));
- issue, amend, suspend or revoke authorizations and to set conditions (AA §3(b) and §3(c) and §9);
- enter a site or facility at any time to carry out an inspection (AA §39);
- enforce regulatory requirements (AA §40-42);
- communicate directly with governmental authorities at higher levels when such communication is considered to be necessary for exercising effectively the functions of the body (ASA & AAP);
- obtain such documents and opinions from private or public organizations or persons as may be necessary and appropriate (ASA & AAP);
- communicate independently its regulatory requirements, decisions and opinions and their basis to the public (AA §3, Act No. 106/1999 Coll. “Free Access to Information”);
- make available, to other governmental bodies, national and international organizations, and to the public, information on incidents and abnormal occurrences, and other information, as appropriate (AA §3(r));

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- liaise and co-ordinate with other governmental or non-governmental bodies having competence in such areas as health and safety, environmental protection, security, and transport of dangerous goods (AA §3(i), ASA, AAP);
- liaise with regulatory bodies of other countries and with international organizations to promote co-operation and the exchange of regulatory information (AA §3(p)).

The Atomic Act also assigns the following authorities to the SÚJB to:

- *“co-ordinate the activity of the National Radiation Monitoring Network”*;
- *“issue authorizations for activities performed by selected personnel”*;
- *“...maintain a State system of accounting for and control of nuclear materials”* and ;
- *“...establish emergency planning zones...”*.

The SÚJB management and staff have a clear understanding of and exercise the authorities, that SÚJB has been assigned by the Czech legislative acts. These authorities are in compliance with those recognized by good international practices and addressed in §2.6. of the IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”. In recent years there have been no appeals against the SÚJB decisions, questioning the authority of the regulatory body, which shows that the SÚJB authority in the supervision of the peaceful use of atomic energy is well recognized in the country. When other authorities having responsibility in matters not related to nuclear and radiation safety are consulted in the authorization process, (as described in chapters 1 and 4 of this report), arrangements are in place, to ensure that the responsibilities are clearly defined and co-ordinated to avoid any omission or unnecessary duplication or conflicting requirements being placed upon the operator. Memoranda of understanding have been signed between SÚJB and those authorities to facilitate the co-ordination of their relevant activities.

2.1.1. Recommendations and Suggestions

No need for recommendations or suggestions has been identified in this area.

2.2. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

With respect to the supervision of the peaceful use of atomic energy and ionizing radiation sources in Czech Republic, the SÚJB undertakes amongst others the following main responsibilities and functions:

- Provide for issuing, amending, suspending or revoking authorizations;
- Review and assessment;
- Carry out regulatory inspections;
- Take enforcement actions;
- Development of regulations and guides;
- Research and development, as needed by the SÚJB;

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- Radiation monitoring;
- Control of nuclear material accountancy;
- Advice on countermeasures during an emergency event;
- International co-operation.

The SÚJB is responsible for drafting decrees, procedures and guides in the fields of its span of control, which are endorsed by the SÚJB Chairman. 14 Decrees have been developed since 1997 by SÚJB, as required by the Atomic Act. A system of SÚJB internal documents has been developed to define the policies, safety principles and associated criteria and working procedures on which the regulatory actions are based. The SÚJB policy and strategy related to safety is clearly described in SÚJB directive VDS 001 “ SÚJB Organization”. This is the top level of the pyramid of the SÚJB internal documents, containing procedures and rules. The development of these documents is an important accomplishment of the SÚJB.

With respect to the review and assessment function, it has to be noted that the current legislative system in Czech Republic requests that most of the regulatory body decisions are taken within a limited time period.

The SÚJB uses the services of independent consultants and technical organizations to assist in assessment of some technical matters. However the regulatory body’s responsibility for making decisions and recommendations are not delegated to any other organization and the final safety decision making is always performed by the SÚJB staff.

The SÚJB is charged with the responsibility and is acting in accordance with the requirements of Chapter 3 of the IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”. The main responsibilities and functions of the SÚJB are well understood by its staff members and implemented with respect to their everyday duties to ensure the effective control of nuclear, radiation, radioactive waste and transport safety in the Czech Republic.

2.2.1. Recommendations and Suggestions

See the recommendation in Chapter 1.2.1.

2.3. INTERFACE AUTHORITY UTILITY, INFLUENCE OF ELECTRICITY MARKET DEREGULATION

Good international practices require that a frank, open and yet formal relationship, based on mutual understanding and respect be established between the regulatory body and the utility. Both the SÚJB and the utilities have dedicated special efforts to foster the establishment of such a relationship in the past years. From the interviews conducted with several representatives of the SÚJB and utilities staff during the review, it can be concluded that the communications and interfaces are in general open and facilitate the implementation of an effective regulatory process. Meetings are held on a regular basis at different levels between the utilities and the SÚJB. With regard to the NPPs, there is an open dialogue at a top management level that seems to build on mutual respect and understanding. During this dialogue a

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process has been established to address safety policies issues as well as important issues related to the actual regulatory process.

The Czech Republic is currently considering the possibilities for economic deregulation of the electricity market. There are several ways, some of which assume privatisation of the NPPs in the country. The possible options for privatisation of the NPPs are yet not decided. Government is aware of the implications on safety of the privatisation process, given the experience in other countries and has regularly consulted the SÚJB on this matter. However, in the view of experts, it would be appropriate for SÚJB to be consulted officially in the final stage of tender invitation preparation so that the safety issues can be addressed.

2.3.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, states in §2.2.(1) that “*A legislative and statutory framework shall be established to regulate the safety of facilities and activities*”.
 - a) **Recommendation:** **The Czech Government should ensure that the authority responsible for the privatisation process of NPPs consults the SÚJB with regard to the implications on safety in the development of the relevant tender documents.**

2.3.2. Good Practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, states in §4.10 that “*Mutual understanding and respect between the regulatory body and the operator, and a frank, open and yet formal relationship, shall be fostered*”.
 - a) **Good Practice:** **The well established process of formal and informal meetings between the SÚJB and the NPP’s management in an organized and systematic manner continuously builds on the established mutual respect and understanding.**

2.4. PUBLIC INFORMATION

According to the Atomic Act in Article 3, §(2)r) the SÚJB:

“shall be obliged to provide the public with adequate information concerning the results of its activities, unless they are subject to State, professional or commercial secrecy, and once a year to publish a report on its activities and submit it to the Government of the Czech Republic and to the public”.

The SÚJB has increased its activities in providing public information. An annual report, that describes the SÚJB activities, is issued and made available to a wide range of interested parties and individuals. Press releases and press conferences are prepared on major SÚJB licensing decisions and any extraordinary event. Any inspector has the authority to inform the public on safety related matters, if he or she so desires.

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In order to cope with the requests for information related to the commissioning of NPP Temelín and to establish more effective public relations, a post for an SÚJB spokesperson was advertised and occupied in 1999. When necessary this spokesperson is supported by two other SÚJB staff members. Their task is to provide timely information to the public and to advise the SÚJB management and staff, on any matters concerning communication to the public. The SÚJB experts on public relations have undergone extensive training in the field of communication, which in addition to their nuclear engineering background, proves to be a good basis for providing objective, factual and easily understandable information to the public.

According to the SÚJB staff members, the activities and responsibilities of the SÚJB to protect an individual, population and environment from the harmful effect of the ionizing radiation is thought to be well known by the public and the SÚJB openness in relation to safety is well demonstrated.

2.4.1. Good Practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, states in §2.6.(11) that “*The regulatory body shall have the authority:... ..to communicate independently its regulatory requirements, decisions and opinions and their basis to the public*”.

- a) **Good Practice:** **The SÚJB has spent a lot of effort and resources to ensure that its authorities, responsibilities, policies, objectives and strategies related to safety are clearly understood and communicated to the public in the Czech Republic as well as in the interested neighbouring countries. Establishing a specialized group on public relations is considered a good practice.**

2.5. INTERNATIONAL CO-OPERATION AND LIAISON

The SÚJB has established bilateral co-operation arrangements with the regulatory bodies of Hungary, Austria, Germany, France, Slovakia, Slovenia, Ukraine, USA, Russia, Japan, Canada and UK.

There is a very good co-operation between the Czech Republic and the IAEA, and it is most effective in the participation of Czech experts in international meetings and in the area of technical assistance provided by the Czech Republic to the IAEA Technical co-operation programme. The SÚJB is actively contributing to the work performed by the forum of the regulatory bodies in countries operating VVER type reactor plants. The relation with the EU has been developed primarily through the participation of the SÚJB experts in the PHARE and RAMG assistance projects and in the CONCERT Group and Nuclear Regulatory Working Group meetings. The co-operation with the EU has been recently intensified due to accession activities initiated for the Czech Republic.

The Czech Republic is also a member of the OECD and is actively involved in the main OECD/NEA activities related to the research and development in the field of nuclear safety. The Czech experts participate in technical meetings, seminars and working group activities organized by OECD/NEA.

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The Czech Republic is also a contracting party to the major international conventions with regards to nuclear safety.

2.5.1. Good Practice

(1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §4.11 that “*National authorities, with the assistance of the regulatory body, shall establish arrangements for the exchange of safety related information to promote... ..co-operation...*”

a) **Good Practice:** The SÚJB has established a very effective communication line with the USNRC to receive support in the licensing process for NPP Temelín. In addition, SÚJB inspectors have received training at the USDOE laboratories and USNRC inspector training centre on the basis of the bilateral agreement between the two regulatory bodies.

RESTRICTED

3. ORGANIZATION OF THE REGULATORY BODY

Experts: Vesselina Rangelova and Alfred Schröder

3.1. ORGANIZATIONAL STRUCTURE

The primary task of the SÚJB is to oversee and assess the nuclear safety and radiation protection of nuclear installations and activities in the Czech Republic. The SÚJB is an independent State Office, which reports directly to the Government. The Prime Minister appoints the SÚJB Chairman. The State Office's independence from the organizations or bodies charged with promotion or use of nuclear technology is established in law.

The SÚJB consists of three main sections each headed by a deputy chairman:

- Management and Technical Support;
- Nuclear Safety;
- Radiation Protection.

In addition there is a Quality Assurance Management Unit and Crisis Co-ordination Centre. Within the Nuclear Safety section there are three departments and two inspectorates (based at NPP Dukovany and at NPP Temelín). Within the section on radiation protection there are five departments and seven regional Centres. Two national institutes on Nuclear, Chemical and Biological Protection and Radiation Protection are also part of the SÚJB, but their structure and staffing is not further addressed in this chapter.

The SÚJB organisational structure is shown in Appendix III.

Two Advisory Bodies, a Commission on Nuclear Safety and a Commission on Radiation Protection were established by the Chairman in 1998 and proved to act as competent and independent advisor on important issues related to the nuclear safety and radiation protection in the Czech Republic. The work of these Commissions was recognized as a good international practice during the reduced scope IRRM mission in 2000.

3.2. STAFFING AND TRAINING

The SÚJB currently employs 182 persons. According to their basic education, they can be divided into the following groups: engineers, physicists, other scientists, technical and general administration staff. The staff distribution amongst the sections and units is as follows:

- 56 professionals belong to the Nuclear Safety Section. From these 56 professionals 20 work in the Department of Inspection. Department of Assessment incorporates 14 professionals and Department of Nuclear Materials 15;
- 78 professionals belong to the Radiation Protection Section. Department of Radiation Sources has 53, Department of Regulation of Exposure 10 and Department of Waste Management and Environment has 8 professionals;

RESTRICTED

- 43 professionals belong to the Management and Technical Support Section. The Office Bureau has 16, Department of Finance and Administration 9, Department of International Co-operation 7 and Department for Control of the Prohibition of Chemical Weapons 8 professionals.

The rest of the employees are administrative and SÚJB top management staff and are directly managed by the Chairman.

The number of staff employed by the SÚJB has been gradually increasing in recent years by recruiting new personnel mainly from institutes, universities and industry. The staff strength has been significantly enhanced and currently the SÚJB appears to employ a sufficient number of personnel with the necessary qualification, experience and expertise to undertake its functions and responsibilities. The SÚJB policy for recruiting people in the past several years was well defined and successfully implemented and although some posts still remain open against the 2000 budget staffing level of 190, the current turnover of the staff is negligible. Effective communication, based on openness and mutual respect, is established between the management and the rest of the SÚJB staff, which contributes to the very good working atmosphere observed during the IRRT mission.

The SÚJB invests substantial resources in terms of both personnel and monetary costs in the training of its staff. However, in the internal audit performed by SÚJB in 1999 to assess the effectiveness of the regulatory body, a need for improvement of the staff training policy was identified. A new internal procedure VDS 039, describing the system to be applied for the SÚJB personnel training, was developed and approved in March 2001. According to this procedure, an individual plan for increasing personal capabilities (IIPC) should be developed and implemented in the training of each professional staff member. The IIPC should be updated regularly. This new approach should ensure that the specific skills and knowledge needed by the individuals to perform their regulatory activities are well identified and effective individual training plans are established, taking into account the personal qualification and experience already gained. The training will consist of combination of self-study, formal training courses, workshops, seminars and on-the-job training, tailored to the employee's needs and role in the regulatory body.

The implementation of the SÚJB new training policy is in its very beginning. There is inconsistency in the level of the detail provided in the developed IIPC for the different sections. In the view of the experts it appears that some general subjects such as development of safety culture, quality assurance management and human factors need to be emphasised in the proposed training. In addition the experts thought that criteria for successful completion of a training activity need to be defined. The SÚJB staff shows great interest in increasing its competence in a number of areas and it is believed, that people will support the implementation of the new training policy. It is understood that a lot of effort, support from the top level management and resources will be needed to develop and successfully implement a systematic approach to individual training of the SÚJB personnel in order to ensure consistency in the conduct of the regulatory activities.

RESTRICTED

3.2.1. Recommendations, Suggestions and Good Practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §4.7 that *“In order to ensure that the proper skills are acquired and that adequate levels of competence are achieved and maintained, the regulatory body shall ensure that its staff members participate in well defined training programmes.”*
- a) **Good practice:** The SÚJB has developed a new training policy, which takes into account the needs of the organization and the individual as well as recent scientific and technological development. The new training programme is tailored to the individual employee’s needs and their role in the regulatory body.
 - b) **Suggestion:** It is suggested to include in the individual training plans criteria for successful completion of the training activities and to review the implementation of the new training policy in a year in accordance with the SÚJB new QA policy.
 - c) **Suggestion:** Consideration should be given to including in the plans for individual training some modules on the latest technological developments and new safety concepts, e.g. safety culture, quality assurance management, human factors, risk-informed decision making, team work, development of communication skills.

See also the suggestions in Chapter 11.5.1.

3.3. QUALITY MANAGEMENT

Since its creation the SÚJB has evolved and matured as a regulator, with a clear separation of its activities as a regulator from those organizations promoting and using nuclear energy. In general it operates according to good international practices and methodologies and benefits from relevant experience of other countries.

Basic elements of a good management system enabling SÚJB to perform its activities in a systematic and consistent manner were put in place from the very beginning of the establishment of the organization in 1993. In line with the recent developments in the field of the regulatory quality management world-wide, the SÚJB created a QA unit that performed an internal audit in 1999 to assess the effectiveness of its management system.

Based on the report from the 1999 audit and taking into consideration IAEA TECDOC-1090 “Quality Assurance Within Regulatory Bodies” as well as Czech standard CSN EN 45004 “General criteria for activities of different inspection offices”, a strategy for the gradual development and implementation of the SÚJB QA system was developed.

During the IRRM mission this strategy was reviewed in detail and was found to be in line with good international practices. In the experts’ opinion, good progress has been made in the area and a large number of documents have already been reviewed by SÚJB and revised to meet the relevant QA requirements. The experts recognized that further effort will be needed to complete the revision of the rest of the documents and to then effectively implement the new QA management system. It was also

RESTRICTED

recognized that during the transition period it will be essential for the SÚJB management to continue to communicate with, motivate and encourage the regulatory body staff in the acceptance and implementation of the new QA system.

To compliment the development of a new QA system a systematic approach is being taken to implement an electronic system to control the documentation flow. Several databases have been developed to document and facilitate the inspection and decision making activities. The system developed to support the inspector's activities is in the most advanced stage of development and in general works well and is used very effectively. At the time of the IRRT mission the system for registration of the SÚJB decisions was under trial. While some difficulties have been encountered by the SÚJB to fill the real data in this particular system, it was considered by the IRRT experts that the use of electronic databases by SÚJB is an important development to improving regulatory effectiveness.

3.3.1. Recommendations, Suggestions and Good practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 "Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety" states in §4.5 that *"The regulatory body shall establish and implement appropriate arrangements for a systematic approach to quality management which extend throughout the range of responsibilities and functions undertaken."*
 - a) **Good practice:** The SÚJB has established a good strategy for implementation of a new quality management in line with the latest international developments in this field.
 - b) **Suggestion:** The SÚJB management should consider QA seminars for the whole staff as a useful tool to support the acceptance and implementation of the new QA system.

RESTRICTED

4. AUTHORIZATION PROCESS

Experts: Marja-Leena Järvinen, Marjan Levstek and
Vladimir Kurghinyan (observer)

4.1. PRESENT LEGAL SITUATION

The legal basis for the authorization process is presented in the Atomic Act in Articles 3(2)b) and c), 9 and 10. The other relevant acts forming the legal basis for the authorization process are Act No. 552/1991 Coll. “State Inspection and Monitoring”, in the wording of Act No. 166/1993 Coll. and the Act. No. 71/1967 Coll. “General Administrative Procedure”.

The authorization process is required for the following activities related to the use of ionizing radiation: siting, construction, operation and decommissioning of the nuclear facilities.

4.2. NUCLEAR POWER PLANTS AND RESEARCH REACTORS

4.2.1. Present licensing practices

The main stages of the licensing process are the site, construction and the permanent operation license, which are granted based on the Construction Act. Besides the Atomic Act and the Construction Act the Environmental Impact Assessment Act and the Environmental Act are relevant in the context of licensing process of a nuclear installation. In different stages of licensing process different regulatory bodies are involved. Some of the systems such as pressure vessel and fire protection system are regulated in addition to SÚJB by other regulatory bodies.

SÚJB represents the only state regulatory body in all the aspects of nuclear safety and radiation protection.

The authorizations given by SÚJB for the main licensing steps are:

1. Site license

For the site approval, the licensee has to submit to SÚJB the “Siting Safety Analysis Report“ for review. This report includes e.g. the description and evidence of suitability of the selected site with regard to siting criteria for nuclear installations, the preliminary assessment of operational impact of the proposed installation on personnel, the public and environment. This report also includes a general quality assurance (QA) programme. The SÚJB Decree No. 215/1997 Coll. “Criteria for Siting Nuclear Facilities and Very Significant Ionising Radiation Sources” gives the requirements for the site approval. The Environmental Impact Assessment process has to be finalized prior to the issuing of the SÚJB decision.

2. Construction license

For the construction approval, the applicant has to submit to SÚJB for review the “Preliminary Safety Analysis Report (PSAR)”, which includes evidence that the proposed design meets all the requirements for nuclear safety, radiation protection and emergency preparedness as laid down in the applicable decrees. More specific QA programmes are also submitted to SÚJB for approval. The SÚJB Decree No.

RESTRICTED

195/1999 Coll. “Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety, Radiation Protection and Emergency Preparedness” gives the main safety requirements. Based on positive review results of PSAR and related documents SÚJB issues the construction permit.

3. Operation license

For the operation approval, the applicant has to submit to SÚJB the Preoperational Safety Analysis Report (PSAR) for review and additional documents in respect to the previous commissioning stages, evidence that installation and personnel are prepared for operation and up-dated limits and conditions of safe operation. The SÚJB Decree No. 106/1998 Coll. “Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities” and Decree No. 195/1999 Coll. “Basic Design Criteria...” give the requirements for this step.

There is a requirement in the Atomic Act that the SÚJB shall approve certain licensing documents such as quality assurance programme for the licensed practices, physical protection programme for nuclear installations and nuclear materials, on-site emergency plan or emergency rules. Additionally it is required that SÚJB shall define the scope and content of the documentation to be approved in decrees.

4.2.2. Permits for particular practices

According to Article 9 of the Atomic Act further permits by the SÚJB are required for: particular stages of commissioning, restart of a nuclear reactor to criticality following a refuelling, discharge of radionuclides into environment, modification of the plant related to nuclear safety and radiation protection, physical protection of nuclear materials or facilities, emergency preparedness of the nuclear installation etc. Especially in the case of modification of the plant further approvals of other regulatory bodies could be needed for example in respect to fire protection or conventional safety. There is no administrative body, which would co-ordinate all the safety relevant aspects in the licensing process. Only the applicant is required to collect all separate approvals of the participating regulatory bodies.

Licensing of the training reactor VR-1 was done in the accordance with the Construction Act and with the State Supervision Act. After the promulgation of the Atomic Act in 1997 the research reactor licensee was given five years to adjust its licensing documentation to the new act. Regarding the regulatory requirements for the operation the research reactor it is treated in the same way as the NPPs.

4.2.3. Guidance to the licensee

The Atomic Act in its Appendix describes the documentation, which has to be submitted with the application for different types of approvals and permits for individual activities. There is no detailed guide which would define detailed format and content of these documents. The format and content are agreed on the case by case basis in the negotiations between the applicant or licensee and the SÚJB. The results of the negotiations are documented in the minutes of the meetings, letters and the decisions of the SÚJB.

RESTRICTED

4.2.4. Review by the regulatory body

The review process of the SÚJB is described in the internal QA documentation. Procedure VDS 046 describes the processes for granting all the different authorizations required by the Atomic Act. The co-operation between the different SÚJB departments is given in the procedure VDS 049. A team of the SÚJB specialists is formed to review and assess more demanding applications such as commissioning of NPP Temelín or approval of new NPP Dukovany Operational Safety Report after 10 years of operation. The responsibilities of the team members are described in the relevant VDS rules and procedures.

In the review process of the submitted documentation the SÚJB is using a technical support organisation (TSO) as an independent reviewer.

4.2.5. Approvals and permits

The Atomic Act sets requirements for the time in which approvals and permits shall be issued or rejected. In case of incomplete application the SÚJB makes a request for additional information. The process allows time for the licensee to respond. SÚJB may decide to pause the approval process until adequate information has been received.

In the approvals and permits granted by the SÚJB their validity is specified. The conditions which are required to be fulfilled with due time are also specified.

The operating permit for an NPP is usually granted for four years which is the cycle time of the in service inspections. The current practice is to use approvals after refuelling for placing new requirements on the NPP e.g. regarding the periodic safety review. The content and the time scale for the periodic safety review is defined in such a decision.

Current practice is that the follow up of the fulfilment of the conditions of the approvals and permits is made mainly manually but there is in trial operation data base which would enable the SÚJB personnel to track all their decisions and the related conditions.

4.2.5.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS, document DS 290 draft 10 “Documentation Produced and Required in Regulating Nuclear Facilities” states in §232 that “*The effectiveness of document control system should be evaluated on the basis of the capability of retrieving past documentation under different conditions and based upon different searching requirements (e.g. by date, origin, type, subject)...*”
 - a) **Recommendation:** The SÚJB management should encourage the personnel to participate in the development of new data base of the decisions “Registry of Decisions” and to use this data base to improve the efficiency of the regulatory body.

4.3. MODIFICATION CONTROL

The Atomic Act requires that reconstruction or other changes affecting nuclear safety, radiation protection, physical protection or emergency preparedness of a

RESTRICTED

nuclear installation or a workplace with significant or very significant ionising radiation source shall be subject to approval by the SÚJB.

There is no guide on the process of performing and approving modifications. The SÚJB has agreed with the licensees how to categorize the modifications in respect to relevance for safety. The categorisation of the modifications is the primary responsibility of the license holder but it is subject to the inspection and supervision of the SÚJB. Modifications are classified into three categories:

- A. Modifications affecting nuclear safety
- B. Modifications important to nuclear safety
- C. Modifications not related to nuclear safety.

The modification of category A and B and in some cases also C are subject to approval by SÚJB whereas the rest of the modifications of category C is sent to SÚJB for information only. The review process of the modification by the SÚJB is described in the internal QA documentation. Instruction VDMI 046 describes the processes for granting approvals for modifications whereas the co-operation between the different SÚJB departments is given in the VDS 049.

See also Chapter 7 on Development of Regulations and Guides.

RESTRICTED

5. REVIEW AND ASSESSMENT

Experts: Marja-Leena Järvinen, Marjan Levstek
and Johann-Klaus Hohenberg (observer)

5.1. SAFETY ASSESSMENT CRITERIA

The upper level criteria for review and assessment are not defined in detail but they cover all the areas of nuclear safety. The Atomic Act and the 14 related Decrees of SÚJB cover the different areas of licensing. All basic criteria and requirements are implemented in these basic documents, whose fulfilment is legally binding and from the part of the license holder unconditionally required for all phases during the whole lifetime of a nuclear facility, e.g. for design, construction, all stages of operation and decommissioning.

On the practical level there exists no comprehensive guidance on detailed criteria. Detailed criteria (requirements), applied primarily to the individual components and systems are defined and follow a set of guides and/or national industrial standards. When, in some special cases, criteria do not exist, the international recommendations, standards or guides, are adopted. These additional criteria, as well as the form and content of the documentation to be submitted are always the subject of detailed specialist discussions between the SÚJB and the licensee (applicant). The conclusions of these meetings are recorded in the minutes of the meetings and depending on the subject send to an applicant/licensee by a letter.

The Nuclear Safety Section has issued guides on some current topics: periodic safety review of operating NPPs, erosion corrosion of the secondary side equipment, qualification of VVER 440/213 components, detection of leakage of primary coolant when leak before break is applied, lifetime determination for the pressure vessel and internals during operation and qualification of in service inspection methodologies for primary circuit components.

5.2. DETERMINISTIC AND PROBABILISTIC ASSESSMENT

The basis and the objective of deterministic and probabilistic assessment is to verify compliance with the safety criteria. The establishment of the safety criteria is in the competence of SÚJB.

Review and assessment of the SÚJB in the nuclear utility licensing process is mostly with deterministic tools. Up to now probabilistic methods have practically not been used by SÚJB for assessing the design of plant. But it has been used for approving the emergency zones and optimization of the limits and conditions for operation of the NPPs.

In SÚJB review and assessment of nuclear safety the concept of design basis accidents play an important role. To some extent there has also been further prevention done to reduce the effects of beyond design basis accidents.

5.2.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS document DS 248 draft 10 “Review and Assessment of Nuclear Facilities by the Regulatory Body states in §733 that “As a complement to the deterministic approach described in para. 731, the

RESTRICTED

regulatory body may require an evaluation of the risks arising from the facility. A common method to provide such an evaluation is for the operator to perform a quantified risk analysis or probabilistic safety assessment (PSA). PSA provides a comprehensive, structured approach to identifying failure scenarios and the corresponding damages to the facility, and as a last step deriving numerical estimates of the risk to workers, the public and the environment. PSA provides a systematic approach for determining whether the reliability and independence safety systems are adequate for checking defence in depth provisions (Ref. [8]) and assessing whether the risks are as low as reasonably achievable. It is usual in such analyses to use less conservative assumptions and to consider best estimate values.”

- a) **Recommendation: The SÚJB should develop and implement a strategy for complementary use of deterministic and probabilistic analyses in safety assessment.**

5.3. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

Within the Nuclear Safety Section of SÚJB the Department of Nuclear Installation Assessment is responsible for performing the review and assessment of the licences technical submissions. For large reviews and assessments (e.g. POSR) a team is formed and the responsibilities of the members are described in the VDS procedure related to the task. In practice inspectors from the Department of Inspection and the Radiation Protection Section also participate in the work of the team.

The SÚJB uses several TSOs and independent experts to assist in the review and assessment process. The SÚJB procedure VDS 20 describes the process for awarding contracts and sets out the requirements for the quality and independence of the evaluation. The process requires that an institution, or individual, should not evaluate their own work performed for another organization e.g. the utility or NPP. A potential contractor has to demonstrate their qualification, competence independence etc. Contracts in the framework of technical support are subject to the rules for spending from public budgets.

At the Nuclear Research Institute (ÚJV) at Rez there is an independent Nuclear Safety Regulation Support Division. It is used exclusively for regulatory support and is funded from the SÚJB budget. There are four experts employed full-time and temporary additional resources can be contracted from the institute and/or other TSOs as necessary.

The experts identified that there is no specialist assessment expertise within the SÚJB in the area of human factors and civil engineering. The review and assessment in these two areas is done for SÚJB by the TSOs. Related organisational issues are covered by the QA Unit. A TSO is also used for psychological tests for the nuclear safety inspectors. SÚJB is assessing the safety indicators of the NPPs to get information on the level of the safety culture of the licensee.

A commission for validating computer codes, which are used in safety assessments has been established. Members of the commission come from the SÚJB, TSOs and as well as from licensees. In the authorization process only analyses performed by computer codes, which were validated by the commission, are accepted

RESTRICTED

by the SÚJB. Once a year the SÚJB submits a list of evaluated codes and their evaluations to the utilities.

5.3.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS, document DS 247 draft 10 “Organization and Staffing of the Regulatory Body for Nuclear Facilities” states in §303 that “*A regulatory body for nuclear facilities should include staff with a wide range of technical and human factors expertise. A list of areas of specialization that may need to be covered by the staff or by consultants for the various facilities to be regulated is presented in Appendix I (of DS 247). How these disciplines are represented in the organizational set-up depends on the phase and scale of the nuclear programme. The regulatory body should have sufficient experienced staff to be able to do basic regulatory work and to evaluate the quality and results of work performed for it by consultants.*”
- a) **Suggestion:** SÚJB should consider preparing a strategy for development of future capabilities for assessment of human and organisational aspects of the operation of NPPs.

5.3.2. Good Practices

- (2) **BASIS:** IAEA SSS document DS 248 draft 10 “Review and Assessment of Nuclear Facilities by the Regulatory Body” states in §732 that “*As part of its review and assessment, the regulatory body should ensure that the computer codes are based on well-understood principles. Computer codes should be validated against experience or experiment that the coding has been done accurately and the input data have been correctly assigned...*”
- a) **Good Practice:** SÚJB has formed a Commission for validating computer codes, which are used in the safety assessments. Use of validated computer codes in the licensing process increases its efficiency and reduces the pressure to the regulator and licensee.

5.4. PERFORMANCE OF THE REVIEW AND ASSESSMENT

For large assessments, such as the evaluation of the Temelín Pre-operational Safety Analysis Report, the SÚJB prepares a Safety Evaluation Report. In general in permits and approvals the result of the safety evaluations are presented. At present in the approval process there is the modernization project of I&C for NPP Dukovany. The internal report of the safety assessment is regarded as an unofficial document supporting the decision.

NUREG 0800/84 has been used to assess safety analyses reports of NPPs. The format of Temelín Pre-operational Safety Analysis Report and of chapters of Dukovany safety analysis report concerning I&C modernization has been agreed with the utility to comply with the Regulatory Guide 1.70. The exceptions in the format and content due to VVER design were agreed with the licensee.

In the course of safety assessment the requests for additional information (RAI) are sent to the licensee in case the documentation presented to the SÚJB is incomplete. In some cases adequacy of the additional information is reviewed by the TSOs. The TSO assessment reports are discussed on the meetings with SÚJB and the

RESTRICTED

licensee if needed and agreements are reflected in minutes of the meetings. For selected parts of the safety analysis report for NPP Temelín and NPP Dukovany a database has been created to manage, track and record the closure of the requests for additional information.

A report on ageing of the primary circuit and other important components of NPP Dukovany is submitted to the SÚJB once a year. The assessment of the operational reliability of the I&C systems at NPP Dukovany during 1995 – 1999 (based on plant data) was performed by a TSO on contract to SÚJB. This systematic analysis of ageing was used to improve plant safety. The results of the assessment were used as the basis for a modification to the I&C output logic circuit structure to improve the reliability of the plant.

5.4.1. Good Practices

(1) **BASIS:** IAEA SSS document DS 290 draft 10, “Documentation Produced and Required in Regulating Nuclear Facilities” states in §225 that *“Different types of documents have to be prepared by the operator for carrying out its responsibilities with respect to the safety of a facility. Some of these documents shall be submitted formally to the regulatory body for review and assessment within the authorization process. Other documents are reports that should be submitted to the regulatory body periodically...”*

a) **Good Practice:** SÚJB took the initiative to commission an independent analysis in support of their assessment which resulted in improvements to the operational reliability of the existing I&C systems at NPP Dukovany.

5.5. RESEARCH

Based on the Czech national policy on research and development the SÚJB prepares a yearly research and development programme in the areas of nuclear safety and radiation protection. The approved programme is financially evaluated and financial resources are approved from the national budget. 50 % of the costs of the research projects is funded from the SÚJB budget the remaining 50 % has to be assured by the contracted institution. SÚJB informs the utilities on the research and development programme. The dissemination of the results outside SÚJB is possible with a special agreement between SÚJB and a third party that the results will not be used for commercial purposes.

The research and development programme represents deepening of the present SÚJB expertise and follows the state-of-the-art in nuclear safety and radiation protection.

5.5.1. Recommendations and suggestions

(1) **BASIS:** IAEA SSS document DS 247 draft 10 “Organization and Staffing of the Regulatory Body for Nuclear Facilities” states in §234 that *“...“The regulatory body may require research and development in support of its regulatory functions in such areas as inspection techniques, analytical methods or in developing new regulations and guides.”* and in §235 that *“The regulatory body’s organizational structure should reflect these needs either by*

RESTRICTED

setting up a research unit or by having staff who can define research and development needs, initiate, co-ordinate and monitor the work and evaluate the results. Regardless of how it is carried out, the regulatory body must ensure the research is focused on regulatory needs, whether short or long term, and that the results are disseminated to the appropriate organizational units.

- a) Suggestion: SÚJB should consider reviewing its research and development strategy to ensure that possible future needs are taken into account.**

RESTRICTED

6. INSPECTION AND ENFORCEMENT

Experts: Bruce Mallett, Byron Williams and Vladimir Kurghinyan (observer)

6.1. INSPECTION PROCESS

The SÚJB has a systematic approach to the inspection programme. The reactor inspection programme is conducted by the Department of Inspection in the Nuclear Safety Section (NS). Inspection of other nuclear installations or applications, such as medical facilities, is conducted by departments in the Radiation Protection Section (RP). There are two types of inspection, namely planned and unplanned.

The overall plan for the inspections is based upon a 6 month programme. The process for all inspections is outlined in SÚJB internal procedure No. VDS 037. NS has additional inspection procedures described in VDS 008. RP also has additional inspection procedures described in VDS 043. Areas to be inspected for the NPP factor in the licensee's four year cycle for in-service-inspection, previous inspection findings, and safety reviews. The areas are placed in the 6 month programme by the Department of Inspection in NS during a meeting every 6 months. All Offices and Departments input their inspection plans for the next period during this meeting. Examples of areas in the programme for NPP are Operations, Maintenance, Engineering and Plant Support. Individual inspections are performed by one individual, or by teams of individuals, within the time frames established in the six month programme.

Co-ordination of the status of NPP operations and events is performed daily during a teleconference between each resident site office and participants from appropriate Departments in NS and RP in SÚJB Headquarters. This conference is used for lessons learned between the participants and to discuss subsequent follow up actions, as necessary.

SÚJB inspects reactor facilities based upon plant changes, current plant work, events, the licensee's in-service-inspection programme and deterministic information. Risk information from the NPP Dukovany risk assessment was used by SÚJB during review of I&C modifications. However, the use of plant risk assessments, in the reactor inspection programme has been limited to date. Currently, the NPP audit programmes are limited to review of events. SÚJB does not review these audits or licensee self-assessments programmes on a planned basis.

NPP Temelín is in the phase of commissioning and limited power operation, the inspection programme reflects this condition. As the units become operational, there will be a need to ensure consistency between the inspection programme for NPP Temelín and NPP Dukovany.

SÚJB uses the same 6 month planning process for non-NPP sites (e.g., research reactor, medical, academic and industrial use sites). Individual and team inspections for the research reactor are performed by the Department of Nuclear Installation Assessment in NS and by the departments in the Radiation Protection Section. (This includes inspections by the Regional Centres and the specialized inspection groups for the NPPs). Individual and team inspections for sites, other than reactors, are performed by the Regional Centres. The frequency of and checklists for these inspections are contained in procedures.

RESTRICTED

6.1.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.14. that “...*the regulatory body shall establish a planned and systematic inspection programme. The extent to which inspection is performed will depend on the potential magnitude and nature of the hazard.*”
 - a) **Suggestion:** SÚJB should define a process for factoring risk information into the development of the 6 month inspection programme and for selected samples during individual inspection planning.
- (2) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.14. that “...*the regulatory body shall establish a planned and systematic inspection programme.*”
 - a) **Suggestion:** SÚJB should include system based inspections as part of the plan. For example, over a four year period, SÚJB should ensure that they have inspected the complete system. An example of a system would be the essential portion of the electrical power system that supplies power to the NPP safety systems.
 - b) **Suggestion:** When formulating the 6 month inspection programme in Nuclear Safety section, SÚJB should consider including inspection of the licensee’s processes. For example, inspection of the overall effectiveness of the licensee’s maintenance process, related to nuclear safety.
- (3) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.13. that “...*one of the main purposes of regulatory inspection and enforcement is to ensure that deficiencies and deviations are identified and are corrected or justified without undue delay.*”
 - a) **Recommendation:** SÚJB should expand their inspection programme to include a review of the licensee’s audit/self-assessment programme. The purpose would be to determine whether the licensee is adequately correcting identified problems.

(Note: Currently, the NPP audit programmes are limited to review of events. If the licensees expand their audit programmes SÚJB should expand their inspection programme accordingly.)

6.1.2. Good Practices

- (4) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §4.2. that “*If the regulatory body consists of more than one authority (in this case the two NPP inspectorates), effective arrangements shall be made... ..to prevent conflicting requirements being placed on the operator.*”

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- a) **Good practice: The Department of Inspection discusses operational events and issues on a daily basis simultaneously with both NPP resident site inspectors**
- b) **Suggestion: SÚJB should ensure consistency between the overall inspection programme for both NPP sites, when NPP Temelín becomes operational.**

6.2. INSPECTION DOCUMENTATION

The process for documenting the results of inspections is contained in procedures. It includes a written protocol that is produced at the end of each inspection and provided to the licensee. The licensee signs that they have received the protocol. The inspectors also complete an internal report for each inspection. Oversight of the content of the protocols for NPP sites is reviewed and integrated with other findings during a monthly meeting, led by the Department of Inspection. The monthly meeting results are documented for future use.

There is an appeal process for protocol findings as described in SÚJB internal procedure No. VDS 037.

SÚJB has developed procedures that describe the overall inspection programme and developed procedures that serve as a checklist for individual inspections. Although each group in Nuclear Safety, e.g. the NPP inspectorate, has copies of these (they are also on the SÚJB Internet web site) it is not clear which document defines the complete official set. In Radiation Protection procedure VDS 040, there is a description of the complete set of procedures and reference documentation. This serves as an Inspection Manual in that area.

6.2.1. Recommendations and Suggestions

There were no suggestions or recommendations in this section.

6.2.2. Good practices

- a) **Good Practice: SÚJB reviews all protocols for appropriate follow up and for consistency during a monthly meeting between all inspectors and managers who authored a protocol during the month.**

6.3. TRAINING AND QUALIFICATIONS

Discussions with SÚJB managers and a sampling of inspectors indicated that there is sufficient education and experience to cover all the areas inspected in NS. Training for new inspectors is based on a plan, which is described in SÚJB internal procedure No. VDS 007. Individual inspectors must have certain experience and training completed and passed an examination prior to qualification. Continuing training is established for each inspector by the use of a development plan, which is a new process (see Chapter 3.2). The intent is to review this plan on an annual basis. While the current staff competencies were sufficient to cover all disciplines, there is not a transparent plan for maintaining these competencies.

In addition to inspection activities, SÚJB NS reviews and examines the qualifications of NPP and research reactor operators. The examination process

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includes a Board, which examines operators prior to initial operation and each year thereafter. There is a plan to use the new simulator at NPP Dukovany site as part of the practical portion of the examination process.

(See discussion on human factors in Section 5.3 of this report)

6.3.1. Recommendations and Suggestions

(1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §2.1 that “*The regulatory regime shall be structured and resourced in a manner commensurate with the potential magnitude and nature of the hazard to be controlled.*”, in §4.1 that “*...it (the regulatory body) shall be provided with adequate resources ...*” and in §4.6 that “*The regulatory body shall employ a sufficient number of personnel with the necessary qualifications, experience and expertise to undertake its functions and responsibilities.*”

a) **Suggestion:** SÚJB should continue to develop a comprehensive succession plan to aid in maintaining staff competencies.

6.4. EVENT REPORTING AND EVALUATION

SÚJB has established procedures for the reporting of events by all licensees. These are described in the Atomic Act, Decrees and agreements with NPPs. For NPPs, there is a graded response based upon the safety significance of the event. Each NPP reports a certain level of event to SÚJB headquarters via the crisis management centre. There is an individual on call to receive the notifications. The resident inspectors also receive notification of all abnormal and irregular events. For irregular events, there is an NPP Committee review including SÚJB. Each non NPP licensee reports certain levels of events to the crisis management centre and/or the regional offices.

SÚJB evaluates each event and assigns the appropriate inspection follow up based on the safety significance. A sampling of the reporting and follow up showed that SÚJB used the correct procedures, used the appropriate scope, and assigned inspectors with the correct competencies.

6.4.1. Recommendations and Suggestions

There were no recommendations or suggestions in this section. (See paragraph 7.1.1 (b))

6.5. ENFORCEMENT PROCESS

The legal basis for SÚJB to take enforcement is described in the Atomic Act, Articles 39 to 42 (e.g. Article 40 for remedial measures and Article 41 for penalties). The procedures for identification of violation of requirements are specified in SÚJB internal procedure No. VDS 008 and VDS 043. There is graded action by SÚJB in response to the violations, based upon the significance in terms of nuclear safety or radiation protection. There is a process to escalate action for repeat violations and instances where the licensee fails to take appropriate corrective actions. The SÚJB Monthly Review Board process, which includes licensee follow up actions, is

RESTRICTED

effective in ensuring consistency among inspectors. SÚJB also has manager and inspector meetings with the legal staff to discuss the legal terminology used in protocols.

Trends in violations are reviewed by SÚJB and factored into future inspection follow up during the 6 month inspection planning meeting.

6.5.1. Recommendations and Suggestions

There were no recommendations or suggestions in this section.

6.6. INTERFACE BETWEEN THE REGULATOR AND THE LICENSEE

There are regular meetings with the NPPs on an annual basis to discuss the status of nuclear safety and radiation protection at each site from the licensee's and SÚJB's perspectives. The annual meeting is held at the SÚJB Chair, Deputy Chair and Department manager levels. There are also meetings held between the on site inspectors and their contact points in the NPP organizations.

Although safety culture is discussed during the annual meetings with NPPs, there is no legal basis for the phrase safety culture. This makes it difficult for SÚJB to enforce improvements in safety culture by the operator. Observations by the IRRT showed that safety was the priority in operations and response to events at the sites. Based on the material condition of the safety systems observed at NPP Dukovany and discussions with the resident inspectors, there appeared to be a proper focus.

Feedback from two licensees (i.e. NPP Dukovany and the Nuclear Research Institute) indicates the following:

- SÚJB has a consistent approach by all managers and inspectors;
- The regulator's position is sometimes strict, but always reasonable;
- There is no clear formal process for providing complaints about staff conduct; however, the licensees felt comfortable in contacting SÚJB Headquarters about such complaints and that the complaints would be addressed;
- Inspection results in protocols and discussions with inspectors have added value by providing a broader perspective on issues;
- The 6 month inspection programme is a good practice because it forces SÚJB to set priorities;
- The licensees felt that communications were open, there was 24 hour access to resident inspectors, and it was a good practice to use working level contacts at SÚJB Headquarters.

The resident inspectors at the NPPs (for Temelín and Dukovany) indicated that they do not attend licensee meetings. They do receive the minutes and information generated by those meetings. For example, they receive the Safety Advisory Group audit and review results. The reason provided for not attending was a concern that it would have a negative affect on the openness of the meeting discussions.

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6.6.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.13(6) that “*The main purposes of regulatory inspection and enforcement are to ensure that:… …the operator is managing safety in a proper manner.*”
- a) **Suggestion:** SÚJB should incorporate attendance by inspectors at selected licensee meetings into the inspection programme. This will allow the inspectors to gain insight at how the NPPs ensure that safety is paramount.

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7. DEVELOPMENT OF REGULATIONS AND GUIDES

Experts: Marja-Leena Järvinen and Marjan Levstek

The “regulatory pyramid” consists of three layers Acts, Decrees (Regulations)/ Governmental Ordinances and Guidance, of which the upper two contain obligatory requirements. The authority for issuing decrees is given to the SÚJB by the Atomic Act in Article 3. The areas where the decrees are needed are specified. The SÚJB has completed the preparation and implementation of all the decrees required by the Atomic Act.

SÚJB’s QA system does not contain a procedure for performing periodic evaluation of the decrees issued by SÚJB.

The process of issuing decrees is prescribed by the Atomic Act whereas the process for issuing guides is defined in the SÚJB Guide VDS 27. The decision on the internal organization for issuing the decree is made by the Chairman, whereas the need for issuing a guide, is agreed upon on the meeting of the board of the respective section.

For the development of a decree a group is appointed by the Chairman consisting of internal and external experts. A first draft is prepared that is reviewed within SÚJB. Based on the results of this review the second draft is prepared which is sent to most important stakeholders including the Advisory Committee for review. The comments of the review are taken into account in the preparation of the third draft, which is then submitted, to other Governmental Bodies for comments. It is up to the Chairman to decide whether and which comments are taken into account. SÚJB has to respond and explain how comments were taken into account. The last step before issuing the decree is the check by the Legal Council of the Government for the compliance with the existing Czech legal system. At the end of the process the Chairman signs the decree and after being published in the Official Journal it becomes legally binding. A similar, but less formal, process is followed in the preparation of the guidance.

The guidance, issued by the SÚJB, for the licensee is listed in Appendix VI. There are more guides in the radiation protection area than in the nuclear safety area. The SÚJB makes specific agreements with the licensees for example on format and content of the safety analysis report, modification control and of event reporting from the NPPs.

SÚJB’s internal QA system recognizes two types of internal guides. The first type are VDS “Procedures and Rules” which apply to the activities of all sections of SÚJB, and the second type VDMI “Instructions” which are specific for certain activities or that relate to only one section. The list of VDS and VDMI guides is presented in Appendix V.

7.1.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.28 that “*In developing regulations and guides, the regulatory body shall take into consideration comments from interested parties and the*

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feedback of experience.” and IAEA SSS document DS 290 draft 10 “Documentation Produced and Required in Regulating Nuclear Facilities” states in §327 that *“The regulatory body should ensure that regulations and guides are kept up to date and procedures should be established for their periodic review.”*

- a) **Suggestion:** The SÚJB should consider developing a procedure for performing periodic review and update of the decrees.
- (2) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.26 that *“The main purpose of regulations is to establish requirements with which all operators must comply. Such regulations shall provide a framework for more detailed conditions and requirements to be incorporated into individual authorizations.”* and IAEA SSS document DS 290 draft 10 “Documentation Produced and Required in Regulating Nuclear Facilities”, states in §215 that *“Guides, of a non-mandatory nature, on how to comply with the regulations shall be prepared, as necessary.”* and in §217 that *“A system of guides will help the regulatory body to maintain consistent practices in implementing its requirements...”*
- a) **Suggestion:** The SÚJB should consider reviewing all the different agreements with the licensees e.g. on the event reporting, categorisation of modifications, format and content of safety demonstration and issuing appropriate guide(s) which would prescribe related procedures.

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8. EMERGENCY PREPAREDNESS

Experts: Byron Williams, Bruce Mallett and Vladimir Kurghinyan (observer)

8.1. REGULATION OF LICENSEE'S EMERGENCY PREPAREDNESS

The emergency preparedness (EP) is part of the Czech Republic's system for the management of all types of crises at the local (i.e., district and region) and national levels. SÚJB approves the onsite EP plans for all types of nuclear installations in the state, including NPPs, hospitals industry etc. The approved EP plans are graded in accordance with the safety significance (e.g., NPPs, research reactors, and radioactive sources classified into 5 groups). There was one example noted where SÚJB approved changes to an on-site EP plan prior to the changes being demonstrated. Current Decrees do not require demonstration of changes to an existing EP plan. SÚJB also reviews the off-site plans that are implemented at the local levels. Crisis plans are controlled at the national level by the Ministry of Interior.

New arrangements for crisis management and emergency preparedness have been created by Constitutional Acts and Decrees at the district/regional and national levels in the years 1998 and 2000. A number of exercises have been carried out at the district/regional level, but none as yet on the new arrangements at the national level. However, ZONA 2002, National Exercise, is planned for January 2002 using NPP Temelín as a basis.

There are requirements for licensees using radioactive materials to have a plan to respond to events. Decree No. 219/1997 requires licensees to classify events into a graded response. The Decree requires licensees to demonstrate adequacy of response to events. SÚJB has participated in some of the exercises done by the NPPs and the research reactor at the Research Institute. However, there is no formalization of requirements for SÚJB to witness on-site or off-site EP exercises. Although SÚJB observes some exercises, there are no formal requirements on observers on what to look for, nor on how to provide feed back to licensees on the licensees' exercise performance.

The IRRT noted that the emergency, back up shutdown control room at NPP Dukovany was in the same area as the main control room. This could cause difficulties if an event encompasses both areas. This issue at NPP Dukovany is included in the IAEA Safety Issues for WWER440-213 NPPs (IAEA-EBP-WWER-03, April 1996). SÚJB indicated that they are continuing to discuss resolution of this with NPP Dukovany.

8.1.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 "Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety" states in: §6.5 that "*The arrangements of all parties (i.e., the regulatory body, the local and state authorities and the licensee or operator) shall be exercised on a periodic basis and shall, where appropriate, be witnessed by the regulatory body.*"; in §3.4 states "*...the regulatory body shall co-operate with other relevant authorities, advise them and provide them with information on safety matters in emergency planning and preparedness.*" and

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in §5.13(4) states that *“The main purposes of regulatory inspection and enforcement are to ensure:… ..deficiencies and deviations are identified and are corrected or justified without undue delay;”*

- a) **Recommendation:** SÚJB should formalize their arrangements for witnessing and commenting on the adequacy of on site emergency preparedness performance during exercises. As a part of this, SÚJB should formalize the instructions to individuals observing exercises.
- (2) **BASIS:** IAEA SSS document DS 43 draft 10 “Preparedness and Response for Nuclear and Radiological Emergencies” states in §25 that *“...the regulatory body shall require that the emergency plan shall be tested in an exercise before commencement of operations of a new source or practice.”*
- a) **Suggestion:** SÚJB should consider modifying the decrees and/or procedures as appropriate to require the demonstration of emergency plan changes prior to their implementation at licensee facilities in order to ensure that the revised EP plans remain effective.

8.2. EMERGENCY PREPAREDNESS RESPONSE AND TRAINING

The Atomic Act gives SÚJB the authority to see that licensees take adequate response to events and to recommend countermeasures to be implemented by local/national authorities in response to extraordinary events. To accomplish this function, SÚJB currently has a crisis management team of four members and an on call duty officer (co-ordinator). The four individuals are the first to be contacted by the duty officer and the first to respond to the SÚJB crisis management centre in the SÚJB headquarters office. Since May 2000, SÚJB has made significant improvements in their arrangements, equipment and facilities used for crisis management. SÚJB has a plan to continue improvement by expanding the team to 10 members. This plan is described in internal procedure No. VDS 019. Currently, SÚJB is in the process of providing detailed checklists and training for each of these functions.

The SÚJB crisis management centre is well equipped with information technology tools, including a system for receiving NPP and radiation monitoring data directly. These are used to formulate timely countermeasures during a response. While the software for calculating source terms and radiation doses is the same as that used by the NPPs SÚJB has had the software independently verified to ensure the software will provide valid results when used. (See section 5.3 of this report.)

8.2.1. Recommendations, Suggestions and Good Practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §6.3 that *“Government shall ensure that competent authorities have the necessary resources and that they make preparations and arrangements to deal with any consequences of accidents in the public domain”*. In addition the IAEA SSS document DS 43 draft 10 “Preparedness and Response for Nuclear and Radiological Emergencies” requires in §147 that *“sufficient numbers of qualified personnel available at all times in order that key positions can be promptly and continuously staffed following the identification and notification of an emergency.”*

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- a) **Suggestion:** SÚJB should continue to complete the training programme for each of the new crisis management team member functions prior to changing over to the new arrangements and the SÚJB guidance documentation should include a description of the activities to be performed by each function.
- (2) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §6.5 that “...*emergency arrangements shall include a clear allocation of responsibility for notification and decision making. They shall ensure an effective interface between the operator and the competent authorities and shall provide for effective means of communications*” and in §6.3 that “*Government shall ensure that competent authorities have the necessary resources and that they make preparations and arrangements to deal with any consequences of accidents in the public domain, whether the accident occurs within or beyond national boundaries.*” SÚJB has the responsibility to recommend countermeasures to local and national crisis management authorities. Once recommendations are made, there is no process for feedback on the status of action on the recommendations
- a) **Suggestion.** SÚJB should work with the other crisis management authorities to establish a feedback process of the status of SÚJB’s countermeasure recommendations, made during an event.
- b) **Good practice:** Online radiation monitoring system, with detectors fixed in certain environment locations that are used to relay the same data to the SÚJB crisis management centre, local authorities and to Austria.

8.3. INTERFACE WITH THE MEDIA AND THE PUBLIC

There is a requirement for licensees to inform the public and the media, of the nature of certain events. For extraordinary events, this includes a complete system of warning and communication within an emergency planning zone. In addition, SÚJB provides information to the public from the crisis management centre. The IRRT understood that there is careful co-ordination of the content of information provided by the licensee, SÚJB and other crisis management groups. This co-ordination is an important function for public confidence during the response to an event.

8.3.1. Recommendations and Suggestions

There are no recommendations or suggestions in this section.

RESTRICTED

9. RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

Expert: Friedrich Kaufmann

9.1. LEGAL FRAMEWORK

The legal framework for the management of radioactive waste and decommissioning of nuclear facilities is provided by the Atomic Act Article 2, §o) where radioactive waste is defined as:

“waste substances, objects or equipment for which no further use is foreseen by their owner, with a radionuclide contents or surface radioactive contamination exceeding values permitting their discharge into the environment”.

The Atomic Act in Article 5 §2 goes on to state that *“an importation of radioactive waste into the Czech Republic is prohibited, except for the re-importation of ionising radiation sources produced in the Czech Republic or radioactive waste originated from materials exported from the Czech Republic, for the purpose of their processing or reprocessing, that has been approved...”* by SÚJB.

The responsibilities of the waste generators, including operators of radioactive waste management (RWM) facilities, are given by Article 17-18 of the Atomic Act. Details are given in the Decree 184/1997 Coll. “Radiation Protection Requirements” (hereinafter RPR Decree)

Article 20, §4 of the RPR Decree states radiation protection in radioactive waste management shall be ensured in a way and to the same extent as other unsealed radiation sources. The exposure of workers who handle the waste, as well as exposure of other persons, including the population in the surrounding area, must be reduced under the radiation protection limits and taking into account the ALARA-principles.

The Atomic Act in Article 18, §(1d) requires a licensee *“to keep generation of radioactive waste and spent nuclear fuel to the minimum necessary level”*. In Article 23 of the RPR Decree it is stated that radioactive waste is treated in such a way that the separable and useable materials are as much as possible separated and returned to be reused so that the amount of remaining radioactive waste is as low as possible. Provisions of the Appendix of the Atomic Act requires the following documentation for the issue of a license for ionizing radiation source management:

- 1) justification of the radiation practices;
- 2) evidence of optimization of radiation protection under Article 4 of the Atomic Act;
- 3) monitoring programme and assessment of exposure of exposed workers and other persons and contamination of workplace and its vicinity by radionuclides and ionizing radiation;
- 4) on-site emergency plan;
- 5) delineation of the controlled area;

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- 6) expected amount of radionuclides released into the environment and assumed type and amount of radioactive waste generated, and method of its disposal;
- 7) operational instructions for safe handling of ionizing radiation source.

The documentation specified under items 4 and 5 has to be approved by SÚJB.

An approval issued by SÚJB of a QA-programme for licensed practice is a prerequisite for issue of a permit under Article 9 (1) a) to g), i), j), l) and n) of the Atomic Act.

Article 13 of the Atomic Act requires an Environmental Impact Assessments (EIA) procedures for siting, construction or technology changes and decommissioning of nuclear facilities. The EIA are accessible to foreign participants and requires also assessment of impact beyond national border. EIA procedures include public hearings.

9.2. CLASSIFICATION SYSTEM

The RPR Decree, in Article 22 §2, states that radioactive waste or its mixtures with other substances will be classified according to the applied processing and treatment methods. The classification shall be carried out according to its physical and chemical properties. The wastes are classified as gaseous, liquid or solid. SÚJB has established the classification of radioactive waste principally according to IAEA Safety Series Safety Fundamentals 111-G-1.1. The Low Level Waste Short Lived (LLW-SL) is stored in near surface disposal sites at NPP Dukovany and Richard, which have acceptance criteria based on a safety analysis for each depository. The limitation of long lived alpha emitting radionuclides for each drum is 2×10^7 Bq/m³ per drum reasonably lower than 4×10^8 Bq/t and 4×10^9 Bq/t given in SS 111-G-1.1 §325 and §324 respectively. Low Level Waste Long Lived (LLW-LL) and High Level Waste (HLW) formally do not exist because spent fuel and other materials high in concentrations of long-lived radionuclides have not been declared as waste.

The Atomic Act in the Appendix requires for the issue of a license for ionizing radiation source management, the expected amount of radionuclides released into the environment and assumed type, amount of radioactive waste generated, and method for its disposal to be documentation.

The Atomic Act in Article 8 gives the conditions for effluent discharge and clearance of materials. The clearance levels for the release of materials from regulatory control, including procedures for their calculations, are given by Article 5 of the RPR Decree. There are no special provisions for material recycling. In this case where the requirements for clearance of materials are applied, the operators produced a working manual. The release of materials from regulatory control should be inspected and documented by SÚJB.

9.3. TREATMENT OF LOW AND MEDIUM LEVEL RADWASTE

The waste generated by institutional producers is treated and stored on-site under licensed conditions waiting for their removal to their respective repositories.

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9.3.1. NPP Dukovany

The main producer of low and medium level waste is NPP Dukovany. The liquid waste from controlled areas is collected in tanks and treated in an evaporator. The evaporator concentrates are treated in a bitumenization facility where the bitumenized waste is filled into 200 litre final storage drums that are transported to the on-site disposal shortly after their production.

The solid waste from controlled areas is measured before treatment according to their surface and specific activity with the objective of decontaminating as much as possible. The radioactive waste is placed in drums and periodically compressed in a transportable high pressure facility. The produced pellets are filled into 200 litre final storage drums where the space is filled out with concrete. The organic solid waste is treated without incineration.

The spent ion exchange resins from the treatment of the reactor and spent fuel storage water are stored in tanks. Treatment technologies that allow transfer of this waste into a suitable form for disposal are under consideration.

9.3.2. Nuclear Research Institute (ÚJV) at Rez

The waste from the small national waste producers and from the Nuclear Research Institute (ÚJV) is treated near to its site where the spent fuel is stored. Liquid wastes are evaporated for volume reduction. The concentrates are cemented in 200 litre drums. The solid wastes are compressed in 100 litre drums that are put into 200 litre drums and the space filled with cement. Currently 50 drums per year are produced.

This treatment facility was constructed in the 1950's. A replacement of this old facility is foreseen in the future.

At the waste treatment facilities of NPP Dukovany and the Nuclear Research Institute (ÚJV) the appropriate working documents and QA programmes were produced. The techniques of treatment of low and medium level radioactive waste are in accordance the IAEA Principles of Radioactive Waste Management SS 111-F. According to Article 4 of the Atomic Act and §305 of SS 111-F justification, optimization and dose limitation are taken into account by SÚJB for the decision of the construction of a new waste treatment facility at the Nuclear Research Institute.

9.3.2.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA Safety Series Number 111-F, Safety Fundamentals “The Principles of Radioactive Waste Management” in principle 7 states: “*The generation of radioactive waste shall be kept to the minimum practicable, in terms of both activity and volume, by appropriate design measures and operating and decommissioning practices. This includes the selection of and control of materials, and the implementation of appropriate operating procedures. Emphasis should be placed on the segregation of different types of waste and materials to reduce the volume of radioactive waste and facilitate its management.*”

The mineralization of organic waste is advantageous in respect of improving the long-term safety of the disposal.

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- a) **Recommendation:** SÚJB should require that the operators take into account in future the further minimization of the volume of organic radioactive waste e.g. by incineration.

9.3.2.2. Good Practices

As a result of discussions between SÚJB and NPP Dukovany actions were taken to avoid the use of PVC in the controlled areas. It is administratively forbidden to buy PVC materials for the use in the controlled area. Only the person in charge of the waste handling department can give an exceptional permit.

- (1) **BASIS:** IAEA SSS Report No. WS-R-1 “Near Surface Disposal of Radioactive Waste” requires in §5.1. that “*Conditions for the acceptance of waste disposal ... shall be specified... either generically by the regulatory body or developed by the operator....*” and in §5.7. that “*Requirements shall be established to ensure that such processes (chemical, biological or radiolytic giving rise to the generation of gas and or heat, corrosion or swelling) and products do not unacceptably impair the safety and containment characteristics of the waste package or surrounding barriers.*”

- a) **Good Practice:** SÚJB and NPP Dukovany agreed to forbid the use of PVC in the controlled area of the plant.

9.4. MANAGEMENT OF SPENT FUEL AND OTHER HIGHLY ACTIVE MATERIAL

The spent fuel is stored in the Interim Spent Fuel Storage Facility (ISFSF) at NPP Dukovany site. Forty CASTOR-440/84 casks are stored at the facility, each cask containing 84 fuel elements. The inspections of SÚJB verify that the required physical quantities are monitored. These are temperature on the surface of the casks, pressure between the primary and secondary lids and the dose equivalent rate that allows the radiological situation within the storage facility and the environment to be followed.

Spent fuel and materials containing high concentrations of long lived radionuclides also are stored near the site of the Nuclear Research Institute (ÚJV) containing dry and water cooled storage areas. The cooling water has a very low specific activity.

9.5. FINAL WASTE DISPOSAL

The safe disposal of existing and future radioactive waste in compliance with the requirements for nuclear safety and protection of the population and environment is the responsibility of the Radioactive Waste Repository Authority (RAWRA) which is a state organisation established by the Ministry of Industry and Trade. According to Article 26 of the Atomic Act RAWRA is engaged in preparation, construction, commissioning, operation and closure of radioactive waste repositories and monitoring of their impact on the environment and in further activities related to the:

- conditioning of spent or irradiated nuclear fuel into a form suitable for its disposal or further use;
- keeping records of radioactive waste receipts and their generators;
- administration of payments to nuclear accounts;

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- drafting of proposals for determination of payments to the nuclear account;
- provision for and co-ordination of research and development in the field of radioactive waste management;
- monitoring of financial assets of licensees for decommissioning of their installations;
- provision of services in the field of radioactive waste management;
- management of radioactive waste transported to the Czech Republic from abroad when it is not possible to return it and;
- provision of temporary administration in the case of radioactive waste that has become State property; if these are items that were found, left or hidden.

According to Article 24 of the Atomic Act the producers of radioactive waste “*shall bear all costs associated with its management, from its time of origin to its disposal, including monitoring of radioactive waste repositories after their closure, and including the necessary research and development activities*”. The activities of RAWRA are financed from an interest-bearing account opened with the Czech National Bank known as the Nuclear Account. Assets in the Nuclear Account may only be used for purposes within the specific provisions of Atomic Act.

Article 26 of the RPR Decree requires radiation protection limits in final disposals of radioactive waste. A safety analysis is required to evaluate the possible risks that may occur during the operation, as well as in the period after ceasing of the repository operation. The safety analysis takes into account future possible exposure of the population and it forms the basic document for setting the waste acceptance criteria for disposal. The basis for the safety analysis is the effective dose received by an individual within the critical group of the population.

The isolation of the waste from the biosphere, for the entire period which it can present hazards for man and the environment, is achieved in repositories using multiple barrier systems to prevent the release of hazardous substances. The necessary period for isolation for most of the waste is 300 years with a maximum of 500 years. The radioactive waste is disposed in surface or near-surface repositories at Richard, Bratrstvi and at NPP Dukovany site all under the responsibility of RAWRA.

The Richard depository is situated in a former limestone mine. Since 1964 the radioactive waste from research and medicine has been disposed there. Currently it contains about 5000 drums. The Bratrstvi depository is designed entirely for the disposal of waste containing natural radionuclides radium, uranium and thorium and came into operation in 1974. It currently contains about 700 drums. The NPP Dukovany repository has a capacity of 33000 m³ for disposing of low and medium level waste generated in the operation and decommissioning of the NPP. It has been in operation since 1995. Currently it contains 9600 drums. It is also to be used for the disposal of the waste generated at NPP Temelín. The repositories contain draining systems. Samples from the draining systems and gaseous effluents are taken periodically by the operator and independently by SÚJB.

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9.5.1. Good Practice

(1) **BASIS:** IAEA SSS Report No GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §6.7 that “*Continuity of responsibility between the organizations involved (in radioactive waste management) shall be ensured. Consequently, national policies and implementation strategies for the safe management of radioactive waste shall be developed...*”

- a) **Good Practice: Establishment of the Nuclear Account for financing the activities of RAWRA which is a state owned agency engaged in preparation, construction, commissioning, operation and closure of radioactive waste repositories. Payments have to be made from the generators of radioactive waste.**

9.6. DECOMMISSIONING

The Atomic Act in Article 2 defines decommissioning as “*activities aimed at releasing of nuclear installations or workplaces with an ionising radiation source, following the termination of their operation, for their utilisation for other purposes, or at exempting them from the effect of this Act*”. A licence is needed for decommissioning according to Article 9 §(1g) and Article 13. The compulsory documents are stipulated by item G of the Appendix to the Atomic Act and in sections of the RPR Decree and Decree No. 196/1999 Coll. “Decommissioning of Nuclear Installations and Working Places with Important and Very Important Sources of Ionizing Radiation”. These describe the decommissioning in each stage of the lifetime of a nuclear facility or workplace with significant or very significant ionising radiation sources. Instead of the decommissioning plan there is a set of documents, which is requested every 5 years first of all for the assessment of decommissioning cost and formation of financial reserves and to adjust the annual financial delivery to the reserve funds owned by the operator. The contributions to the funds are annually controlled by RAWRA.

According to Article 14 of the Atomic Act any authorization process, including the approval of decommissioning documents, states that the only responsible person for overall safety is the applicant/licensee. In case of the premature termination of any activity, i.e., prior to a licence termination, the licensee is obliged to contract its legal successor for a performance or safe termination of the activity in question, as stated in Article 16 §7 of the Atomic Act.

The Atomic Act ensures sufficient competent human resources at this stage of facility life dealing with the general obligation of licensees in Article 17 and the obligations stemming from the nuclear safety and radiation protection stipulated in Article 18. The legislation also addresses the release of sites from regulatory control in the Appendix to the Atomic Act and in Article 31 of RPR Decree.

Up to now no plants have been decommissioned. The legal framework fulfils the related requirements of IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”.

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9.6.1. Good Practices

- (1) **BASIS:** IAEA SSS Report No. WS-G-2.1 “Decommissioning of Nuclear Power Plants and Research Reactors” states in §2.11. that “...*the regulatory body should review and, as appropriate, approve the selected decommissioning option, decommissioning plans, quality assurance programmes and other submissions related to the decommissioning of a nuclear reactor.*” and in §5.25 that “*In order to provide the necessary confidence that the resources will be available to maintain radiation and environmental protection during decommissioning, provisions for allocating resources should be established early in the planning of the nuclear power plant design. According to the legal framework, such a mechanism should be established before operation in order to secure funds needed for decommissioning.*”

- a) **Good Practice:** SÚJB requires the operators to actualise the decommissioning plans periodically after 5 years and according to this to adjust the annual financial delivery to the reserve fund for decommissioning.

9.7. QUALITY ASSURANCE PROGRAMME

Operator’s quality assurance programmes are endorsed by SÚJB to provide confidence that items and processes will satisfy requirements for quality specified in the operator’s licence. The requirements for such programmes are similar to those for nuclear facilities and are given in the Decree No. 214/1997 Coll. which requires the implementation of a QA system, its content and development, of selected equipment including those for radioactive waste storage and disposal.

9.8. INSPECTIONS

SÚJB initiates and co-ordinates research and development in such activities not covered by the Ministry of Trade and Industry or Ministry of Environment or RAWRA. The waste treatment, storage and repository facilities are inspected at least twice a year. Each inspection covers e.g. the control of the plant, documentation and education of the staff. The inspections are announced and a protocol is provided by SÚJB.

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10. RADIATION PROTECTION

Experts: Alejandro Bilbao and Johann-Klaus Hohenberg (observer)

10.1. LEGISLATION, REGULATIONS AND REGULATORY AUTHORITY:

The legal framework for radiation protection and for the safety of radiation sources in the Czech Republic is established by the Atomic Act.

The Atomic Act regulates the use of nuclear energy and sources of ionising radiation providing for adequate protection of people and safety of the sources through the establishment of the principles and criteria which need to be applied. It should be noted, that the Atomic Act (Articles 1, 3, 4, 17, 18 & 19) covers all the international principles contained in the IAEA Safety Fundamentals SS120 (published in 1996) on "Radiation Protection and the Safety of Radiation Sources" and that the Decrees and SÚJB internal rules/procedures/methodological instructions regulating this area are developed taking into consideration applicable IAEA standards for radiation, waste and transport safety.

The scope on what should be regulated is adequately defined in the Atomic Act (Articles 2 & 3) providing, in particular, for exemption of practices/sources from the requirements of the decrees. The values for exemption of practices/sources and also for clearance of radioactive materials are set out in the RPR Decree in Articles 4 & 5 having been defined/derived following IAEA standards and European Union directives. In addition, the Atomic Act (Articles 9 & 21) clearly identifies the practices/sources that should be notified and those requiring a decision for use or possession according with their categorisation; radiation exposures not mentioned in such legislation are then excluded from the regulatory control. In this respect, the Atomic Act also requires from the licensees to notify the regulatory body on any actions to be taken in case when the intervention levels are exceeded.

The SÚJB has been established by the Atomic Act as the competent regulatory body with responsibility and authority to supervise that the appropriate radiation protection and safety principles and criteria are applied by those using and possessing radiation sources. SÚJB is effectively independent of Government organisations that are responsible for the promotion and development of the practices being regulated, as well as of the licensees and the designers/manufacturers of the radiation sources used in practices. In addition to the existing expertise of the staff in SÚJB headquarters and its seven Regional Offices, composed of a total number of 80 staff members with 49 of them appointed as inspectors for radiation protection, there is available also the technical support of the National Radiation Protection Institute (SÚRO) which belongs to SÚJB.

SÚJB is empowered to authorize and inspect regulated activities and to enforce the legislation and decrees, having appropriate resources to fulfil effectively its legislative mandate which covers all practices and radiation sources including those artificial sources used in medicine, industry, agriculture, research and education, as well as natural sources in cases where natural radionuclides are or have been processed in view of their radioactive, fissile or fertile properties (e.g. uranium mining and milling). However, the sources used for similar purposes in the Czech Army are excepted from the SÚJB state supervision. In this last case, the law (Act No. 85/1995,

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Art III/1) provides both the Ministry of Defence and the Ministry of Internal Affairs with the responsibilities for the institutional control of activities related to radiation protection in the facilities belonging to them in co-operation with SÚJB. Nevertheless, the above legislative provision should not be a justification to avoid the implementation by SÚJB of the state supervision for radiation protection and safety of radiation sources in the facilities of such organisations, in particular, when they are used also for peaceful purposes (e.g. radiotherapy, diagnostic radiology, gamma radiography, calibration, etc.). During discussions it was clarified that the SÚJB is already implementing the state supervision of the radiation facilities/practices belonging to the Ministry of Internal Affairs; however, similar SÚJB regulatory control of the radiation sources belonging to the Ministry of Defence is not yet carried out.

As confirmed during discussions with the counterpart and also by the review of the documentation available, SÚJB has established a comprehensive set of decrees/recommendations and internal rules/procedures/methodological instructions, including those for quality management and analysis of programme data, to ensure/maintain an effective regulatory programme for radiation protection and safety of radiation sources. The above regulatory provisions are extended also to abandoned/orphan sources which must be notified immediately to the police and/or to the SÚJB who are the responsible competent body for taking the appropriate safety and security measures in such. In this respect, and according with the Atomic Act (Article 3 §(2)q), SÚJB can order how to deal with the abandoned/orphan sources or radioactive wastes. In addition, long term aspects associated with storage/disposal of spent radiation sources are obligatory assessed during the process for authorization of sources and the licensing of the disposal facilities. According with the mandate given by the Atomic Act (Article 4 §(4) to (6) and §(10) and the discussions carried out, it was pointed out that SÚJB has the authority and responsibility at the national level for establishing dose limits, dose constraints, authorized limits and requirements for radiation protection.

SÚJB promulgated the RPR Decree which is based on international recommendations (ICRP Publication No.60) and standards (IAEA Safety Standards SS115 published in 1996), as well as consistent with the European Union directives. It is a performance oriented regulation which fully regulates the requirements regarding the safety and security of radiation sources, as well as the requirements related to occupational, public and patient protection. Following such requirements, for example, SÚJB has access to information on doses to workers in all practices covered by the RPR Decree regulating occupational exposure. It should be noted as a good practice also that under the same decree (Articles 34 & 43-45) during the regulation of the medical exposures, SÚJB is implementing, complementary to the control carried out by the licensee, an independent regulatory audit for planning purposes related to the protection of patients with the full technical support of the National Radiation Protection Institute which is implementing the control using thermoluminescent detection (TLD) techniques.

In addition, SÚJB has a plan to update/revise the decrees/recommendations and internal rules/procedures/methodological instructions as part of its own quality management system for development of documentation which is carried out based on SÚJB staff's experience during the licensing process, inspection and enforcement results, investigation findings, as well as using as appropriate the international

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information available for radiation protection and safety. At present, the current Decree No.143/1997 Coll., on “Transportation and Shipment of Specified Nuclear Materials and Specified Radionuclide Sources” is under revision. The other important existing decrees No.142/1997 Coll.(Type-Approval), No.146/1997 Coll. (Specifying Activities), No. 214/1997 Coll. (Quality Assurance) and No.219/1997 Coll. (Emergency Preparedness) are listed in Appendix IV.

The Atomic Act in Article 2 c) clearly defines a classification for the radiation sources and identifies which part of the regulatory process addresses each type of source. Then, according with its radiological risk, radiation sources are categorised as insignificant, minor, simple, significant and very significant sources. The criteria for such a categorisation are set out in the RPR Decree (Article 6). Nevertheless, although the above categorisation is well applied by SÚJB during the licensing and inspection process for establishing priorities over the regulatory activities to be carried out, it is suggested to take into account the recent international recommendations regarding the categorisation of radiation sources (e.g. IAEA-TECDOC-1191 published in December 2000) as part of the existing SÚJB quality management system for revision/update of the current requirements in national decrees.

10.1.1. Recommendations, Suggestions and Good Practices

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §2.2(2) that “*A regulatory body shall be established and maintained which shall be effectively independent of organisations or bodies charged with the promotion of nuclear technologies or responsible for facilities or activities. This is so that regulatory judgements can be made, and enforcement actions taken, without pressure from interests that may conflict with safety.*”
 - a) **Recommendation:** SÚJB should work with the Government to ensure adequate and consistent state supervision of the Ministry of Defence radiation sources where such sources are used for medical, industrial, education or other peaceful purposes/practices
 - b) **Good Practice:** SÚJB is implementing, complementary to the control carried out by the licensee, an independent regulatory audit for planning purposes related to the protection of patients with the full technical support of the National Radiation Protection Institute.
- (2) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, states in §2.2(1) that “*A legislative and statutory framework consistent with international standards shall be established to regulate the safety of facilities and activities.*”
 - a) **Good Practice:** The Atomic Act No. 18/1997 Coll. fully takes into account the principles established in the IAEA Safety Fundamentals SS120. In addition, during the development of decrees/guidance SÚJB is appropriately considering and using the current international standards for radiation, waste and transport safety as well as other safety related publications published by the IAEA.

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- b) **Suggestion: The recent international recommendations regarding the categorisation of radiation sources (e.g. IAEA-TECDOC-1191 published in December 2000) should be taken into account during the revision/update of the requirements currently set out for the classification of sources in the Decree No. 184/1997 Coll. (Article 6).**

10.2. SYSTEM OF NOTIFICATION, AUTHORIZATION, INSPECTION AND ENFORCEMENT:

As explained before, SÚJB has prioritised the need for gaining regulatory control over sources and practices through the current categorisation system in the Atomic Act Article 2c), in terms of the likelihood and magnitude of potential exposures. The source users have been identified/listed and logged on a comprehensive centralized register with the whole inventory of radiation sources at the national level which is operated and updated continually by SÚJB. It should be noted, that according to the Atomic Act in Articles 18 §(1)c) and 22 e) and the RPR Decree (Articles 53 and 54) all the authorized users of radiation sources have the responsibility for sending to SÚJB periodically updated information/data (at least quarterly) on the radiation sources in their possession/use. This provides SÚJB with a very effective tool for the identification and/or localisation of any source, if it's needed. The above referred register includes information on the licensees, the practices and sources used, the results of the authorization process and the individual doses of the radiation workers. The experts strongly supported SÚJB's intention to extend the register to included information on the results of inspections. Nevertheless, it should be noted that a database with the results of the inspections is kept at present at the Regional Offices.

The licensing requirement for each particular radiation practice/activity is clearly defined by the Atomic Act in Article 9 and guidance on authorization for applicants is provided in its Appendix, which includes the content of the documentation that is required by SÚJB for issue of a licence for individual radiation practices or activities. Guidance is also provided at the SÚJB Internet site for users on the different aspects required during the licensing process (e.g. Recommendation No.4, 1999, with practical guidelines for the implementation of quality control in radiotherapy - gamma beam therapy equipment). SÚJB has also developed internal procedures as follows:

- VDS 047 on issue of permissions and other decisions which provides guidance for the review and assessment of applications;
- VDS 043 on planning, preparation, execution and evaluation of inspection activities (section of radiation protection) and
- VDS 037 "Inspection Procedures"

VDS 037 has a comprehensive set of methodological instructions that follow the international recommendations provided in IAEA-TECDOC-1067 (published in 1999) "Organisation and Implementation of a National Regulatory Programme for Radiation Safety" and IAEA-TECDOC-1113 (published in 1999) "Safety Assessment Plans for Authorization and Inspection of Radiation Sources".

Such guidance and internal rules/procedures/methodological instructions are available to applicants and SÚJB technical staff/inspectors respectively. In addition,

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the experts were informed that 21 specialized recommendations are also available for applicants and authorized users e.g. contracted outside workers, radiation source testing, radioactive waste repository, radiation source reporting, personal dosimetry reporting.

During the visits carried out by the IRRT team in Prague and Kutna Hora to some radiation facilities/practices the decisions granted by SÚJB were reviewed. As a result of the discussions, it was confirmed that during the assessment of applications applicable procedures/methodological instructions (e.g. check lists) are followed, the inspection history is reviewed in case when a revalidation of the decision is taken place, and all the radiation protection and safety issues related to each radiation facility/practice (e.g. dose records, operating instructions of the equipment, monitoring programme, maintenance/inspection of the equipment, staff qualification/training, emergency plans, etc.) are properly addressed. Nevertheless, it was recognized during discussions that in general there was a need for some licensees to exercise the emergency plans approved as part of the SÚJB decisions for certain radiation practices/activities (e.g. industrial gamma defectoscopy) as is carried out in the case of other very significant facilities/practices (e.g. nuclear facilities, radioactive waste storage, industrial mining). Therefore, it was discussed and recognized that for the case of particular radiation practices/activities SÚJB should require the implementation of such exercises periodically as appropriate.

The decisions granted by SÚJB clearly indicate what is authorized (e.g. operation, reconstruction, etc.) and the assessment process is adequately documented including the authorized user's complete application, the safety analysis done and other documents which were used as a basis for granting the decision. SÚJB also requires qualified experts as Radiation Protection Officers (RPO) for each radiation facility/practice and they must pass through special exams and obtain a personal licence.

It should be noted, as explained before, that SÚJB has also a database registering all decisions by category of practice/source and that the outcome of the review/assessment process for each radiation practice/activity is also documented in the same computerized database system. A database of unexpected events with information of all incidents/accidents in the regulated radiation practices/activities is also available. The input on such events is received through the Regional Centres based on the information provided by the licensees who are obliged by the Atomic Act to notify SÚJB on such extraordinary/unexpected events if they happened in their radiation facilities/activities.

In relation to inspections, as referred before in this report, SÚJB has established its priorities based on the current categorisation of radiation sources in use. In particular, and according with the six month plans for inspections prepared by each Regional Office, SÚJB is carrying out complex inspections to some radiation facilities/practices once a year (e.g. in the case of nuclear medicine, radiotherapy and gamma defectoscopy), and for other practices twice a year (e.g. x-ray devices) and once every three years (e.g. nuclear gauges). The establishment by SÚJB of the specialized inspection groups (e.g. for nuclear medicine, radiotherapy, x-ray devices, industrial sources, natural radiation, waste management, NPPs) that carry out inspections with the participation of SÚJB inspectors from different Regional Centres, assisted when needed with specialists from the National Radiation Protection Institute,

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allows a very high qualified assessment of the radiation protection and safety issues in the facilities inspected. This approach to inspections provides the inspectors with the opportunity to share knowledge and experience, especially in the case of new inspectors as part of their on-the-job training. The complex inspections are led by the inspectors of the Regional Centre who have the responsibility for the supervision of a particular radiation facility/activity in their region.

It was checked also that the SÚJB inspectors have available appropriate procedures/methodological instructions (e.g. check lists) which are followed during the course of the inspections. The IRRRT experts confirmed that the inspectors address the main radiation protection and safety issues. The inspectors also review carefully previously identified safety and non-compliance issues in each of the facilities inspected. Such complex and specialized inspections are carried out at least once a year. This, in the view of the experts, explained SÚJB's revalidation process of the decisions granted which for most of such sources is done at around the ten years term.

Although there is a database derived from inspection protocols the experts though there would be benefit in having such information included in the existing centralized register. This would allow SÚJB to use the register as a very effective tool for analysing trends in non-compliance with regulatory requirements and/or any degraded radiation safety issue of the regulated practices/activities.

In accordance with the Atomic Act, Articles 39 to 42, SÚJB has established an enforcement policy and the enforcement actions are applied consistently in accordance with such a policy and the guidance provided in the document VDS 037 (Paragraphs 4.4 & 4.7) with the inspection procedures. Inspection findings lead to timely enforcement actions, consistent with the nature of the radiation risk involved. VDS 043 identifies three levels (minor, significant and serious) in relation to the assessment of the significance of non-compliance with the radiation protection requirements. It should be noted that the inspectors do not have the legal right or authority to stop any radiation facility or activity. In a case when there is serious concern, regarding radiation protection and safety, the inspector has the duty of notifying the situation urgently to the SÚJB Chairman who has the responsibility for deciding on the required action in such a situation.

Any enforcement action from the SÚJB requires a response from the licensee with the corrective actions that have been taken to solve the problems found during the inspection. These enforcement actions are reflected in the inspection protocol indicating the nature of the problem, what is expected from the licensee, and the timing for the response. Later, and after receiving the licensee's response, SÚJB evaluates the licensee's corrective actions in response to the enforcement action instructed by the inspector. In general, SÚJB has been successful in sustaining/defending challenges to its enforcement actions in case when an appeal is received; an appeal is received first by the inspector and when at this level it's not resolved then it is raised to the level of the SÚJB Chairman (see also Chapter 11.4.2). According to procedure VDS 029 on administrative managing for imposing sanctions, SÚJB has established the criteria/values for the application/evaluation of sanctions, if appropriate, in cases of non-compliance with the requirements for radiation protection and safety.

Finally, the experts discussed with SÚJB what lines of communication have been established to the senior management of authorized practices/sources. In some

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cases, SÚJB organized special meetings with good results (e.g. nuclear medicine). Nevertheless, the experts felt that in some cases SÚJB are facing problems with the safety culture at the senior management level in some of the regulated practices (e.g. radiotherapy) at the national level. It was recognized however that more information through specific meetings of the regulators with the senior management representatives of the regulated community by sectors of interest (medicine, industry etc.) could help in improving the situation by promoting understanding and encouraging the development of safety culture within the licensees organizations. Therefore, it is suggested that the SÚJB organize and implement such kinds of meetings on safety culture with senior managers of the regulated facilities/activities as appropriate.

10.2.1. Recommendation, Suggestions and Good Practices.

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §4.1 that “...*the regulatory body shall be structured so as to ensure that it is capable of discharging its responsibilities and fulfilling its functions effectively and efficiently...*” and in §3.3(8) that in order to discharge its main responsibilities the regulatory body “*shall ensure that appropriate records relating to the safety of facilities and activities are retained and retrievable*”.
 - a) **Good Practice:** SÚJB has established a comprehensive centralized register with the whole inventory of radiation sources at the national level which provides the regulator with an effective tool for the identification and/or localisation of any source.
 - b) **Suggestion:** SÚJB should incorporate the information on the results of the regulatory inspections that are available in the existing databases of the Regional Offices to the existing centralized register.
- (2) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, states in §2.2(8) that “*An effective system of governmental emergency response and intervention capabilities shall be established and emergency preparedness shall be ensured.*”
 - a) **Recommendation:** For certain radiation practices/activities SÚJB, as it’s carried out for other very significant sources (e.g. reactors, radioactive waste management) should require periodical exercises of the emergency plans approved, as appropriate. SÚJB should request information on the results of the implementation of such exercises and/or check directly their implementation when it’s necessary.
- (3) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §3.2(4) that “*In fulfilling its statutory obligations, the regulatory body:... ...shall carry out regulatory inspections*” and in §5.14 that “*The regulatory body shall establish a planned and systematic inspection programme. The extent to which inspection is performed in the regulatory*

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process will depend on the potential magnitude and nature of the hazard associated with the facility or activity.”

- a) **Good Practice:** SÚJB has established specialized inspection groups which are carried out in general with the participation of SÚJB inspectors from different Regional Offices. These groups allow a highly qualified assessment of the radiation protection and safety issues in the facilities inspected and an opportunity to share knowledge and experience.
- (4) **BASIS:** IAEA SS115 “International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources”, states in §2.28 that *“a safety culture shall be fostered and maintained to encourage a questioning and learning attitude to protection and safety and to discourage complacency, which shall ensure - inter alia -....(c) the responsibilities of each individual, including those at senior management levels, for protection and safety be clearly identified and each individual be suitable trained and qualified.”*
- a) **Good Practice:** SÚJB has established appropriate lines of communication with senior management of authorized practices, in particular for nuclear medicine, through the organisation of special meetings and the provision of information with a good result.
- b) **Suggestion:** SÚJB should organize/implement meetings on safety culture with senior managers of the regulated facilities/activities where these meetings are not already being held e.g. radiotherapy.

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11. TRANSPORT OF RADIOACTIVE MATERIAL

Expert: Ronald Pope

11.1. TRANSPORT SAFETY INFRASTRUCTURE IN THE CZECH REPUBLIC

11.1.1. General

Transport of radioactive materials in the Czech Republic involves many types of materials, packages and modes, ranging from very small quantities in excepted packages to large quantities in certified (Type B and/or fissile material) packages; and from single mode to multi-modal transport involving road, rail and air. There is no transport of radioactive material by water, and transport of radioactive material by post is forbidden.

The shipments of radioactive material have included, and in many cases will continue to include, transport of:

- uranium concentrate (yellowcake) as low specific activity material in industrial packages (IPs), generally exported to other countries;
- radionuclides for industrial and medical purposes in excepted, Type A and Type B packages (Some of these are produced at the Nuclear Research Institute (ÚJV) at Rez within the Czech Republic; but many others are imported into the Czech Republic, mostly by air. In the future, radionuclide production for transport may arise from a facility at a university in Prague. In addition, some high activity sources have been imported for research purposes.);
- low-level radioactive waste from institutional producers (e.g., hospitals, schools, research institutions) are immobilized by concrete and disposed at the tunnel type near-surface disposal facility at the Richard site (near the town of Litomeric). Low-level radioactive waste produced by NPP Dukovany (and NPP Temelín after it is put into operation) is disposed of in 200 litre drums in the vault type near-surface disposal facility at the Dukovany site. Multiple drums are transported to the disposal facilities in industrial packages;
- fresh NPP fuel transported in Type AF and Type B(U)F packages, imported from other countries and;
- spent NPP fuel transported in Type B(U)F packages and spent research reactor nuclear fuel transported in Type B(M)F packages, involving, over the years, export, import, and domestic shipments.

The nature of the transport of radioactive material in the Czech Republic has been significant and in some cases has been changing with time. Examples include:

- Initially, uranium concentrate was exported from state enterprise DIAMO, s.r.o. facilities to the Soviet Union (now the Russian Federation) for processing into fresh fuel elements. Currently the uranium concentrate is exported to the Russian Federation to support the continued operation of NPP

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Dukovany, and is exported to Canada or France to support the operation of NPP Temelín.

- Historically, fresh nuclear fuel fabricated from uranium concentrates exported from the Czech Republic was imported by rail to NPP Dukovany, and by air and road to NPP Temelín. However, current practice is the import by air and road transport of fresh fuel for NPP Dukovany and the import by sea transport into a Baltic port and then by rail transport for NPP Temelín. It is noted that with the advent of the new air regulations on 1 July 2001, the air transport of this fuel will not be possible without extensive efforts to either certify the fresh fuel as low dispersible material, or the package as a Type C package.
- Earlier (1989 to 1992), the spent nuclear fuel from NPP Dukovany was transported by rail for interim storage at the Jaslovske Bohunice NPP in the current Slovak Republic. Recently (1995 to 1997), all of that spent nuclear fuel was transported back to NPP Dukovany and is in the Interim Spent Fuel Storage Facility (ISFSF) using dual-purpose (transport and storage) CASTOR 440/84 flasks specifically designed for the VVER 440 reactor fuel.

Transport of spent nuclear fuel for NPP Dukovany now occurs only on site, from the reactor to the ISFSF. A similar arrangement is envisaged for NPP Temelín. Ultimately, however, a long-term storage or disposal facility may be constructed (possibly at or near a uranium mining facility) and the dual-purpose CASTOR flasks would then be used for transport by rail to that facility. All of these shipments have occurred and will continue to occur by rail.

To date, there have been 26 flask shipments constituting 141.12 metric tonnes of spent nuclear fuel from NPP Dukovany to the Jaslovske Bohunice NPP, and 14 flask shipments returning that spent nuclear fuel to NPP Dukovany. The earlier shipments to the Jaslovske Bohunice NPP were undertaken in TK-6 (Russian design) flasks and C-30 (German design) flasks, and the import shipments back to NPP Dukovany were undertaken in C-30 and CASTOR 440/84 flasks (both of German design) for further interim storage. All fuel transported back to NPP Dukovany in the C-30 flasks was then transferred to the CASTOR 440/84 flasks at NPP Dukovany.

Currently, 40 CASTOR 440/84 flasks now reside fully loaded with spent nuclear fuel in the NPP Dukovany ISFSF.

In this section, the term “*radioactive material*” is used in a manner consistent with the definition provided in the IAEA’s 1996 Edition of the Transport Regulations [TS-R-1 (ST-1, Revised), 2000], and the term “*fissile material*” is a subcategory of radioactive material (as defined in para. 222 of TS-R-1).

The review undertaken for transport safety as part of this IRRT mission was based upon the draft questionnaire developed by the IAEA to support IAEA Transport Safety Appraisal Service (TransSAS) missions. However, the evaluation undertaken as part of this IRRT mission was not as comprehensive as a full-scope TransSAS mission appraisal would have been. In performing this review, the expert was guided by the following principle set forth in the IAEA’s Transport Regulations:

“Transport shall be deemed to comprise all operations and conditions associated with and involved in the movement of radioactive material; these

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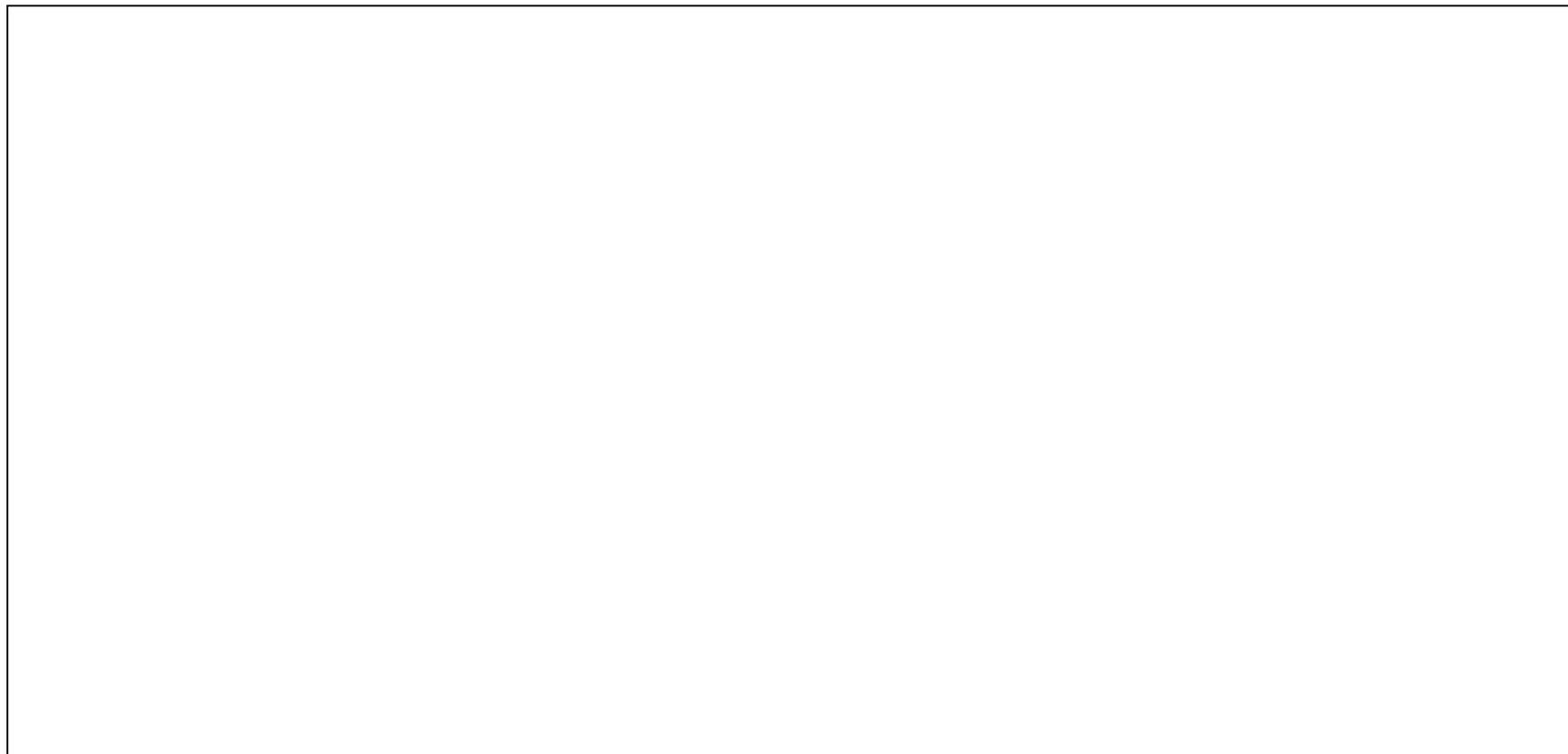
include the design, fabrication and maintenance of packaging, and the preparation, consigning, handling, carriage, storage in transit and receipt at the final destination of packages. Transport includes normal and accident conditions encountered in carriage and in storage during transit". [paragraph 103 of the IAEA Transport Regulations (Safety Series No. 6, 1985 Edition (as amended 1990))]

11.2. LEGISLATIVE/GOVERNMENTAL RESPONSIBILITIES IN TRANSPORT

A sound and complete legislative/governmental regulatory structure exists clearly defining the responsibilities of SÚJB in regulating the safe transport of radioactive material in the Czech Republic. As in many states, the regulatory authority is shared with another body. In this case the SÚJB shares regulatory authority with the Czech Republic's Ministry of Transport and Communication. However, it is noted that the SÚJB has ultimate control, and functions as the sole competent authority for Class 7 radioactive material. The Ministry of Transport and Communications implements the "modal" requirements promulgated by international modal organizations (International Civil Aviation Organization, International Maritime Organization, and the UN/ECE), but the SÚJB controls all shipments of Class 7 whereas the Ministry of Transport and Communications exercises control for the other 8 classes of dangerous goods.

The division of responsibility is illustrated in Fig. 11.1.

Fig. 11.1. Transport Regulatory Structure in the Czech Republic



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The principal Acts and Decrees that are used to regulate safe transport in the Czech Republic transport are:

- Act No. 111/1994 Coll., the Road Transport Act
- Act No. 266/1994 Coll., the Rail Transport Act
- Act. No. 114/1995 Coll., the Inland Waterway Navigation Act (this does not directly apply to the transport of radioactive material as inland waterways are not typically used for transport of radioactive material in the Czech Republic)
- Act No. 18/1997 Coll., on Peaceful Utilisation of Nuclear Energy and Ionising Radiation (the Atomic Act) and on Amendments and Additions to Related Acts
- Act No. 49/1997 Coll., the Civil Aviation Act
- Government Order No. 1/2000 Coll., the Transport Order for Public and Cargo Rail Transportation
- Decree of the Ministry of Transport and Communications No. 17/1966 Coll., the Air Navigation Rule
- Decree of the Ministry of Foreign Affairs No. 8/1985 Coll., on the Convention with COTIF/CIM/RID
- Decree of the Ministry of Foreign Affairs No. 64/1987 Coll., the European ADR Agreement
- Decree of the Ministry of Transport and Communications No. 222/1995 Coll., the Waterways, Port Traffic Regulations (this does not directly apply to the transport of radioactive material as inland waterways are not typically used for transport of radioactive material in the Czech Republic)
- Decree of the SÚJB No. 142/1997 Coll., on Type-Approval of Package Sets for Transportation, Storage or Disposal of Radionuclide Radiators and Nuclear Materials, Type Approval of Ionizing Radiation Sources, Type Approval of Protective Aids for Working with Ionizing Radiation Sources and Other Equipment for Working with Them
- Decree of the SÚJB No. 143/1997 Coll., on Transportation and Transit of Selected Nuclear Materials and Selected Radionuclide Radiators
- Decree of the SÚJB No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and about their Classification into Individual Categories
- Decree of the SÚJB No. 145/1997 Coll., on Accounting for and Control of Nuclear Materials and their Detailed Specification
- Decree of the SÚJB No. 187/1997 Coll., on Radiation Protection Assurance
- Decree of the SÚJB No. 214/1997 Coll., on Quality Assurance during Activities Related to Usage of Nuclear Energy and Activities Resulting in Irradiation and About Establishing Criteria for Classification and Division of Selected Facilities into Safety Classes

RESTRICTED

- Decree of the SÚJB No. 219/1997 Coll., on Details of Assurance of Emergency Preparedness of Nuclear Facilities and Workplaces with Ionizing Radiation Sources and About Requirements for the Content of Internal Emergency Plans and Emergency Rules
- Decree of the Ministry of Foreign Affairs No. 64/1987 Coll., on the European Convention on International Road Transportation of Dangerous Materials (ADR)
- Decree of the Ministry of Foreign Affairs No. 8/1985 Coll., on the Convention on International Railway Transportation (COTIF)
- Information of the Ministry of Foreign Affairs No. 133/1994 Coll., on Accession of the Czech Republic to the Vienna Convention on Civilian-Legal Responsibility for Nuclear Damage and to the Common Memorandum Pertaining to the Application of the Vienna Convention and Paris Convention
- Decree of the SÚJB No. 324/1999 Coll., Establishing Limits of Concentration and Volume of Nuclear Material for which no Provisions for Nuclear Damages are Applicable

11.2.1. Recommendations and Suggestions

Fig. 11.1 provides an excellent overall view of the legislative and governmental actions that have been implemented to regulate transport of radioactive material. However, the figure requires additional elaboration and will soon require updating. For example, the upper left-hand box notes that:

- the “*IAEA SSS Report No. 6 1985 Edition (as amended 1990)*” apply. However, as new requirements for air, road and rail go into effect through Acts Numbered 49/1997, 111/1994 and 266/1994 on 1 July 2001, the 1996 Edition of the IAEA SSS No. TS-R-1 (ST-1, Revised), 2000, will be in effect in the Czech Republic through the various international modal organization’s regulatory documents (ICAO, IATA, ADR and RID).
- “*other international agreements*” apply. The Czech Republic is a member state of the International Civil Aviation Organization. Thus by the Chicago Convention, it is party to the ICAO’s regulatory document (i.e., the ICAO Technical Instructions).

In addition, since:

- new regulations are coming into force as early as 1 July 2001 (through the air, road and rail modal regulations),
- the full issuance of the updated IAEA Transport Regulations as an SÚJB document will not be completed by SÚJB until 1 July 2002, at which time it will be issued as a recommendation in a blue cover with a green stripe, and
- regulations applicable to the Czech Republic are envisioned to be changing approximately every two years beginning in 2005 (based on the forthcoming 2003 Edition of the Agency’s Transport Regulations);

it is important that the SÚJB communicate clearly to all of those involved in the transport of radioactive material (i.e., consignors, carriers and consignees) the manner in which transport safety is regulated and how those regulations are changing in the country.

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- (1) **BASIS:** IAEA SSS Report No. TS-R-1 “Regulations for the Safe Transport of Radioactive Material” states in §103 that the assignment of responsibility for actions associated with satisfying each requirement in the Transport Regulations “*remains the prerogative of each government...*”. In addition, the Foreword to TS-R-1 notes that “*it is recognized that not all regulatory changes can be implemented simultaneously; Member States ...are therefore invited to provide for use of both the ‘old’ and the ‘new’ ones during a period transition that may last for a few years*”.

- a) **Suggestion:** Consideration should be given to issuing updated information on the transport regulatory structure in the Czech Republic reflecting new regulatory requirements in TS-R-1 coming into force from 1 July 2001, as an information document to all consignors, carriers and consignees in the Czech Republic involved in the transport of radioactive material.

11.3. APPLICABLE REGULATIONS, ORGANIZATION OF REGULATORY BODY, AND APPLICATION OF REGULATIONS FOR TRANSPORT

For the domestic transport of radioactive material in the Czech Republic, and for international transport into, through or from the Czech Republic, the applicable regulations for transport of radioactive material are currently based on the 1985 Edition (as amended 1990) of the IAEA “*Regulations for the Safe Transport of Radioactive Material*” (Safety Series No. 6). SÚJB is working to adopt the 1996 Edition (as revised in 2000) of the IAEA Regulations for the Safe Transport of Radioactive Material (SSS No. TS-R-1, ST-1, Revised). The basis for the Czech Republic’s transport regulations is established at multiple levels:

- legislative acts;
- decrees by authorized bodies;
- regulatory decisions by ministries and other governmental bodies and;
- guides issued by SÚJB.

Since the Czech Republic is party to the Chicago convention (for air transport), the European Convention on International Road Transportation of Dangerous Materials (ADR), and has issued a decree from the Ministry of Foreign Affairs on the Convention on International Railway Transportation (COTIF), all transport by air, road and rail within, into, from and through the Czech Republic will be regulated according to the requirements of the 1996 Edition of the IAEA’s Transport Regulations beginning 1 July 2001. In support of this pending change, the SÚJB has translated the 1996 Edition into Czech, and issued it as a guide with a blue cover (as a non-binding information document approved by the pertinent SÚJB deputy manager). It will reissue the document on 1 July 2002 as a recommendation in a blue cover with a green strip, which will be approved by the SÚJB chairman. Thus, the Czech Republic is well advanced in adopting the newest edition of the Regulations on a schedule consistent with that recommended by the relevant international bodies (IAEA, ICAO, IMO and UN/ECE).

11.3.1. Conservative and Graded Approach to Regulating Transport

A conservative and graded approach to regulating the transport of radioactive material is taken in the Czech Republic. This approach is consistent with the graded approach taken in

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the IAEA Transport Regulations (e.g., see para. 106 of TS-R-1). For example, for each type of consignment under the regulatory authority of the SÚJB:

- Each carrier transporting radioactive material must be authorized by the SÚJB (which is a conservative approach that goes beyond the requirements in TS-R-1).
- Each shipment must be authorized prior to departure where each applicant for shipments is registered (which is a conservative approach that is not a requirement in TS-R-1); and information on the radiation protection programme for that shipment must be developed by the consignor, approved by the SÚJB and documented with SÚJB (which implemented a requirement from TS-R-1 in advance of the other requirements of that edition of the Regulations being implemented).
- Each carrier is usually obliged, on the basis of the transport authorization issued by SÚJB, to notify the relevant authorities (both within the Czech Republic and – if an import or export – outside the Czech Republic) of the planned date of transport 40 days in advance of the departure date of the shipment (this is graded and conservative approach, well in excess of the 7-day requirement established in para. 558 of TS-R-1). If this condition is not part of the authorization issued by the SÚJB (usually involving shipments of small quantities of radioactive material, determined at the discretion of the SÚJB), then the transport date must be notified in compliance with the Atomic Act and Decree No. 142/1997 Coll. at least 7 days in advance (consistent with the requirement in para. 558 of TS-R-1).
- The safety documentation for transportation authorization includes instructions regarding specification of the transportation method and the proposed route including an alternative route (which is a conservative approach that goes beyond the requirements in TS-R-1).
- In addition, as specified in section M of the Appendix to the Atomic Act, the SÚJB reviews each land route taken by shipments of radioactive material it regulates and imposes route restrictions that result in some shipments avoiding routes such as those with high bridges, poor quality roads, inappropriate road profiles, high population-density areas, water bodies near the route, industrial zones, road and rail crossings, tunnels, or having other features that are of concern to the SÚJB staff. This action is taken by the SÚJB staff out of concerns for ensuring that a high level of safety for physical hazards (e.g., extreme drop heights) is maintained during transport, that the recovery of packages should an accident occur is practical, and that threats to physical security are minimized. This often includes detailed pre-approval route surveys, accompanying shipments with police, and pre-travel of routes just prior to shipment to ensure conditions have not changed since the initial route survey. The concerns for avoiding excessive drop heights on a given route, needs to recognize that the 9 m drop mechanical test specified in paras 725 and 727 of TS-R-1 with its accompanying conservative acceptance requirements as specified in paras 648, 649, 656, 669 and 682 provides a significant margin of safety by requiring (a) impact onto a unyielding surface (which seldom exists in transport environments), (b) impact in the most damaging orientation (which is a very low probability event), and (c) retention of contents, shielding and criticality safety control following exposure to the impact. The SÚJB requires assessment of risks resulting from the nature of the radioactive content, transportation route selected, and concerns for physical security. Care is taken in these assessments to ensure all

RESTRICTED

relevant factors that might degrade safety are appropriately considered, including balancing from a risk-informed point of view concerns over excessive drop heights with other package design criteria, operational procedures and defined potential threats.

11.3.1.1. Good Practices

- (1) **BASIS:** IAEA SSS Report No. TS-R-1 “Regulations for the Safe Transport of Radioactive Material” in §103 relative to carrying out actions specified in TS-R-1, “*It remains the prerogative of each government to assign this responsibility*”. Part of that prerogative is to impose, at the discretion of the government, requirements that may go beyond those specified in TS-R-1. Those in the SÚJB regulations which are applied in a conservative sense include authorization of carriers, authorization of shipments regulated by SÚJB (in excess of those required by §820 of TS-R-1), advanced notification of shipments (in excess of those required in §558 of TS-R-1), and specification and approval of routes (as noted in §108 of TS-R-1, controls on routing are not part of the TS-R-1 requirements but may be instituted by a state for reasons other than radiological safety).
 - a) **Good practice: SÚJB applies a conservative and graded approach to controlling radioactive material transport which enhances the safety of transport and encourages all involved to be fully conscious of the need for a sound safety culture.**

11.4. REVIEWING, ASSESSING, AUTHORIZING AND INSPECTING TRANSPORT

Paragraph 802 of TS-R-1 specifies that a state’s competent authority has the responsibility to issue approvals on:

- various designs of packages and forms of materials;
- special arrangements;
- certain shipments;
- radiation protection programmes and;
- calculations pertaining to radionuclide values that are not included in the table of basic radionuclide values in TS-R-1.

Issuing of these approvals requires actions on the part of the competent authority to define for applicants the procedures to be followed. It results in the requirement for the performance of reviews and assessments of applications submitted. Paragraphs 501 through 518 of the IAEA’s Safety Practice Document on Compliance Assurance for the Safe Transport of Radioactive Material (Safety Series No. 112, 1994) elaborates on responsibilities of competent authorities in reviewing applications for approvals.

The SÚJB informs applicants of the requirements they must fulfil in applying for approvals, either for new approval or for renewal of approval. In the case of package designs, SÚJB requires periodic reviews and revisions. These reviews and revisions may be required as frequently as once per year, but must occur at least once every three years.

Four expert persons are responsible at SÚJB headquarters for radioactive material and nuclear material transport and package approvals. These staff, in addition to performing

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assessment of safety documentation, also perform inspections, impose remedial measures, propose penalties and elaborate proposals of regulations, guidance, etc. Inspections of transport not requiring authorization (i.e., shipments of radioactive material in excepted, industrial or Type A packages) are performed by SÚJB personnel of regional centres. Thus, the SÚJB has a team of more than ten people involved in inspections, and a core team of four of these people are involved in reviewing and issuing approvals. The core transport safety staff may also call upon other expert staff from within the SÚJB to assist in reviews. This provides for a broad base of technical skills that otherwise would not be available from the transport staff at SÚJB headquarters alone.

11.4.1. Radiation Protection Programme for Transport

The 1996 Edition of the IAEA's Transport Regulations, for the first time, requires a radiation protection programme be established for the transport of radioactive material. In advance of implementing the 1996 Edition in its domestic regulatory structure, the SÚJB has already imposed this requirement on its consignors and carriers. Specifically, the programme of radiation protection is part of the documentation to the transportation authorization (§13, §2 d) and Appendix M, item 4. of the Atomic Act). Regular monitoring of doses received by personnel accompanying the transportation is identical to that of other workers working with ionizing radiation sources. They are not monitored separately. See especially §50 and §57 of the RPR Decree.

11.4.1.1. Good Practices

(1) **BASIS:** IAEA SSS Report No. TS-R-1 "Regulations for the Safe Transport of Radioactive Material", requires in §301 that "*A Radiation Protection Programme shall be established for the transport of radioactive material*". This paragraph then further elaborates on the nature and extent of the measures to be employed in the programme, that they specifically shall be related to the magnitude and likelihood of radiation exposures.

- a) **Good practice: The requirement to have a radiation protection programme as part of the documentation in each transportation authorization issued by SÚJB provides a sound basis for ensuring radiation protection and fostering a radiation safety culture by consignors, carriers and consignees.**

11.4.2. Reviewing, auditing, issuing approvals, and performing inspection and enforcement responsibilities

The SÚJB provides in depth review of applications for package designs, and ensures complete and archived documentation associated with these reviews. The reviews include applications for designs originating in the Czech Republic, and for endorsement of designs originating outside the Czech Republic. The SÚJB requires approvals for all radioactive material shipments, not just those specified in §820-823 of TS-R-1. This increases the workload on the regulator, but is consistent with the conservative approach noted previously. IAEA SSS Report No. GS-R-1 "Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety" in §5.6 indicates that "*amendments, renewals, suspensions or revocations of authorizations shall be undertaken in accordance*

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with a clearly defined and established procedure". This review in the transport safety area demonstrated that the SÚJB operates to this requirement.

The SÚJB has detailed a method for allowing applicants to appeal decisions should they disagree with decisions made. In this procedure (Act No. 71/1967 Coll.):

- the involved party has the right to submit an appeal against an SÚJB decision within 15 days of notification of the decision;
- the SÚJB responsible person submits a recommendation to the appeal to the SÚJB Chairman within 30 days;
- the SÚJB Chairman decides appeals (He/she is obliged to review appeals, and acts independently but may request advice from a special commission established by him/her. He/she reviews the contested decision in its full scope, and either changes or cancels the decision, or rejects the appeal and confirms the decision.);
- The SÚJB Chairman decisions on the appeal cannot be appealed again, it can only be contested in an independent court.

A similar detailed and graded approach is taken by the SÚJB to enforcement penalties relative to non-compliance situations in the packaging and transport of radioactive material in the Czech Republic.

All of the SÚJB transport expert staff at headquarters and the inspectors at the regional centres serve as inspectors for transport safety. The headquarters transport safety experts serve as inspectors for the shipments requiring package type approvals (fissile material shipments, shipments in Type B packages, special arrangements, etc.). For shipments in packages requiring design approval and shipment approval, approximately 30 percent are inspected which includes all spent fuel shipments and approximately 60 percent of all fresh fuel shipments. For shipments in packages requiring design approval but not requiring shipment approval, it is estimated that approximately 30 percent are being inspected.

The regional centre inspectors are responsible for inspecting shipments not requiring package type approvals (e.g., radiopharmaceuticals in excepted or Type A packages, low-level waste in industrial packages). Shipments of radiopharmaceuticals from the cyclotron at the Rez research institute are inspected by the regional inspector at least once per year and in some cases has occurred as frequently as four times per year. Data on adequacy of shipment inspections were not obtained for other areas in the Czech Republic involving shipments not requiring package approval. However, based on the sampling of data during this review, the inspection record appears to be commendable, and follows the graded approach that is used in the Transport Regulations (i.e. greater attention is being paid to those shipments that pose the greater hazard due to the activity or fissile nature of their contents).

Relative to inspections and enforcement, §1.10 of the IAEA's International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (Safety Series No. 115, 1996) indicates that "*The principal parties shall permit duly authorized representatives of the Regulatory Authority,to inspect their protection and*

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safety records and to carry out appropriate inspections of their authorized activities.” Paragraphs 1.11 through 1.14 of Safety Series No. 115 establish guidelines on how to treat non-compliance situations. Paragraphs 5.18 to 5.21 of GS-R-1 define considerations relative to enforcement during non-compliance situations that should be included in a regulatory programme, and paragraphs 4114 through 4119 of Safety Series No. 112 elaborate, in the transport safety area, on enforcement actions following investigations, including the need for written notice, suspension and prosecution. SÚJB’s review of its already sound policies and procedures dealing with inspection and enforcement of transport activities indicates that it is consistent with the inspection and enforcement requirements specified in Safety Series No. 112 and 115 and GS-R-1.

11.4.2.1. Recommendations and Suggestions

- (1) **BASIS:** IAEA SSS Report No. TS-R-1 “Regulations for the Safe Transport of Radioactive Material” in §535 through §537 imposes new marking requirements for uncertified packages (including, depending upon the type of package, UN Number, proper shipping name, type of package, VRI code of the country of origin, name of manufacturer). These need to be placed on packages by the consignor when those requirements go into force in regulations applied at the state level. Through the modal organization’s regulations, these will go into force in the Czech Republic on 1 July 2001 (with no transitional time period) for air shipments, and on 1 July 2001 (with a six-month transitional time period for road and rail shipments). The non-certified packages observed during this review (the Type A packages at the cyclotron of at the research centre at Rez, and the IP used for transporting waste observed at NPP Dukovany) did not have these new markings (Note: in June 2001 these packages did not require these new markings, but they will by 1 January 2002). In addition, it is noted that the UN Numbers for the different types of contents changes significantly with the new Regulations.

The IAEA published guidance on transition from the 1985 to the 1996 Edition of the Transport Regulations (“*Arrangements for Transition from the 1985 Edition (as Amended 1990) to the 1996 Edition of the IAEA Transport Regulations*”, IAEA-TECDOC-1194, January 2001). The SÚJB has issued translation of TS-R-1 as a guide with a blue cover in the Czech language which conveys the new requirements to users. Also, the new requirements were conveyed to users at a joint SÚJB and Ministry of Transport and Communications seminar in March 2001.

- a) **Recommendation:** The SÚJB should communicate quickly to all consignors transporting radioactive material within, into, out of, or through the Czech Republic concerning the changes that are being made to the Regulations. This communication should emphasize guidance on proper marking of packages for low radioactive material contents (e.g., radiopharmaceuticals) which do not require certification and the need to change, in a timely fashion, to the use of the new UN Numbers and Proper Shipping Names. (Note: Any shipments involving the air mode will need to be in compliance beginning 1 July 2001.)
- b) **Suggestion:** The SÚJB should consider expediting translation of TECDOC-1194 into the Czech language and making this guidance available to all of the consignors and carriers involved in the transport of radioactive material in the Czech Republic.

RESTRICTED

- (2) **BASIS:** Safety Series No. 112 states in §462 that “A major feature of any competent authority’s compliance assurance programme will be the performance of inspections of the transport operations...” and “...their frequency should be determined by the scope and activities of the organization being inspected, as well as by their complexity and radiological significance”. In addition Safety Series No. 112 also states in §463 that “It is important that all types and aspects of transport, consistent with the size of the radioactive material transport industry within a country, are periodically inspected”. IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §5.14 that “The extent to which inspection is performed in the regulatory process will depend upon the potential magnitude and nature of the hazard associated with the facility or activity.” and in §5.15 “Inspection by the regulatory body, both announced and unannounced, shall be a continuing activity.”
- a) **Suggestion:** The SÚJB should review its policy concerning those shipments that are being inspected, and those that are not, to ensure that all types and aspects of shipments which do not require SÚJB permission under para. 9.1.m of the Act No. 18/1997 Coll. are periodically inspected consistent with the guidelines of paras 462 and 463 of Safety Series No. 112 and paras 5.14 and 5.15 of GS-R-1.

11.5. TRAINING AND EMERGENCY RESPONSE FOR TRANSPORT

Although the competent authority does not have the responsibility for training of personnel involved in transport, it does have the responsibility to ensure adequate training occurs, and that its own employees are adequately trained in the transport regulations so they can properly fulfil their assigned tasks.

Once or twice each year, persons involved in dangerous goods transport participate in a seminar arranged jointly by SÚJB and the Ministry of Transport and Communication, and regulatory requirements for Class 7 radioactive material are presented by SÚJB staff as part of this seminar.

The competent authority also has the responsibility to ensure emergency instructions accompany every shipment. Since the Czech Republic abides by ADR requirements for road transport, etc., consignors in preparing shipments for transport use the forms specified by this organization.

The competent authority has responsibility to ensure emergency planning and preparedness capabilities exist for the transport of radioactive material. This capability is often unique to the other activities involving radioactive material since transport accidents occur outside of controlled facilities. The expert observed that (a) emergency response capabilities lie at the emergency response region level, which keeps the response distances quite short, and (b) to date, no exercises or drills for transport emergency response have been undertaken in the Czech Republic other than the periodic testing of the communications systems, with the exception that, over the past few years, SÚJB has organized two emergency training exercises, one involving large package rail transport and the other involving large package road transport. Exercises involving small packages have not been performed.

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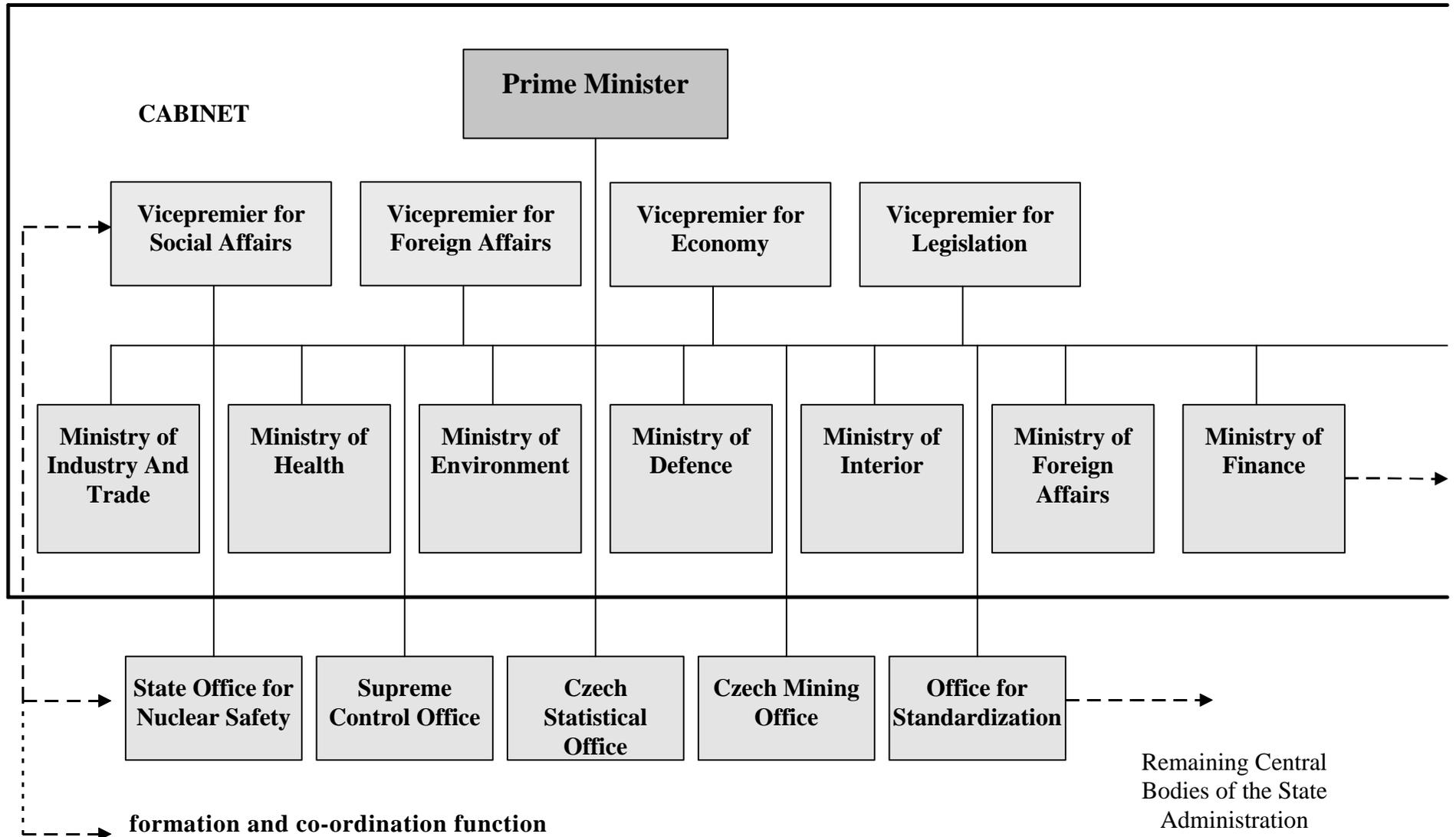
11.5.1. Recommendations and Suggestions (See also Section 3.2.1)

- (1) **BASIS:** IAEA SSS Report No. GS-R-1 “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety” states in §4.7 that, “*In order to ensure that the proper skills are acquired and that adequate levels of competence are achieved and maintained, the regulatory body shall ensure that its staff members participate in well defined training programmes*” and Safety Series No. 112 states in §106 that “*While competent authorities are responsible for assuring compliance with the Regulations (which must include oversight and enforcement of all regulations), the prime responsibility for ensuring safety in transport rests with consignors and carriers...*”. Safety Series No. 115 states in §I.4 that “*Employers, registrants and licensees shall ensure, for all workers that appropriate training in protection and safety be provided, as well as periodic retraining and updating, and that adequate records be maintained*”. Safety Series No. 112 indicates in §205 that the competent authority “*..may need to ensure that adequate training information and programmes are available so that the staff of users can acquire appropriate levels of knowledge of the regulatory requirements. In order to achieve the aim of full compliance with the regulations, there should be provisions for appropriate training. The competent authority should also sponsor seminars and conferences for the parties involved in the transport of radioactive material.*” Safety Series No. 112 in §4102 through §4106 elaborates on training. In the Czech Republic, the responsibility for training has been placed on the consignor (in the Atomic Act). SÚJB does not provide state-sponsored training of carriers or consignors, but the Ministry of Transport and Communications provides training for all nine classes of dangerous goods. Since 1987, only five representatives from the Czech Republic have been trained at IAEA transport safety training courses, and some of these personnel are known to no longer be involved in transport in the Czech Republic.
- a) **Suggestion: SÚJB should consider nominating its headquarters and regional inspector staff to be trained at the European regional training course on transport safety periodically offered by the IAEA.**
- (2) **BASIS:** IAEA SSS Report No. TS-R-1 “Regulations for the Safe Transport of Radioactive Material” specifies in §308 that “*...emergency provisions need to be established by the relevant national competent authorities, and these provisions shall be observed to protect persons, property and the environment.*” It refers the users of the Regulations to the planning and preparing for transport emergencies document, which will be published shortly by the IAEA as TS-G-1.2. In turn, this draft document elaborates relative to the response to transport accidents involving radioactive material on (a) the need for a proper framework for, and methods for successfully planning and preparing for; (b) responsibilities for establishing a national co-ordinating authority and facilitating notification and communications for such events; (c) the roles and responsibilities of the government, consignors, carriers and radiation protection teams; (d) the phases of response, (e) the need for training, (f) guidelines for performing transport emergency drills and exercises, (g) the review of transport emergency plans, and (h) how to handle public information if such an event occurs.
- a) **Suggestion: The SÚJB should consider undertaking testing of its transport emergency capabilities beyond simply testing communications systems or capabilities for large package transport. It should ensure it has undertaken comprehensive planning and should consider undertaking drills and**

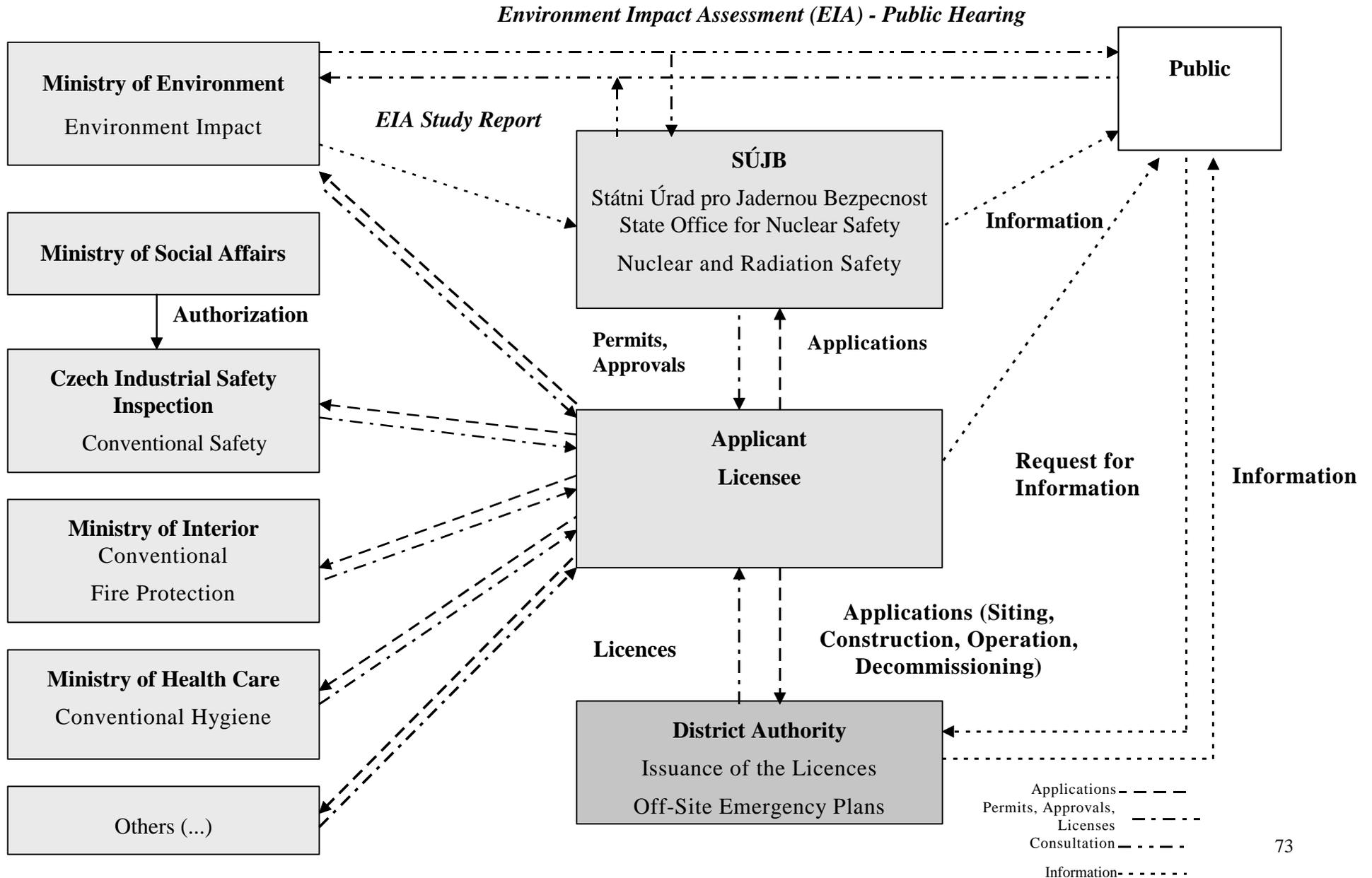
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exercises and implementing other features of planning and preparing for transport emergencies as documented in the draft of TS-G-1.2, especially for small radioactive material transport packages.

APPENDIX I GOVERNMENTAL STRUCTURE

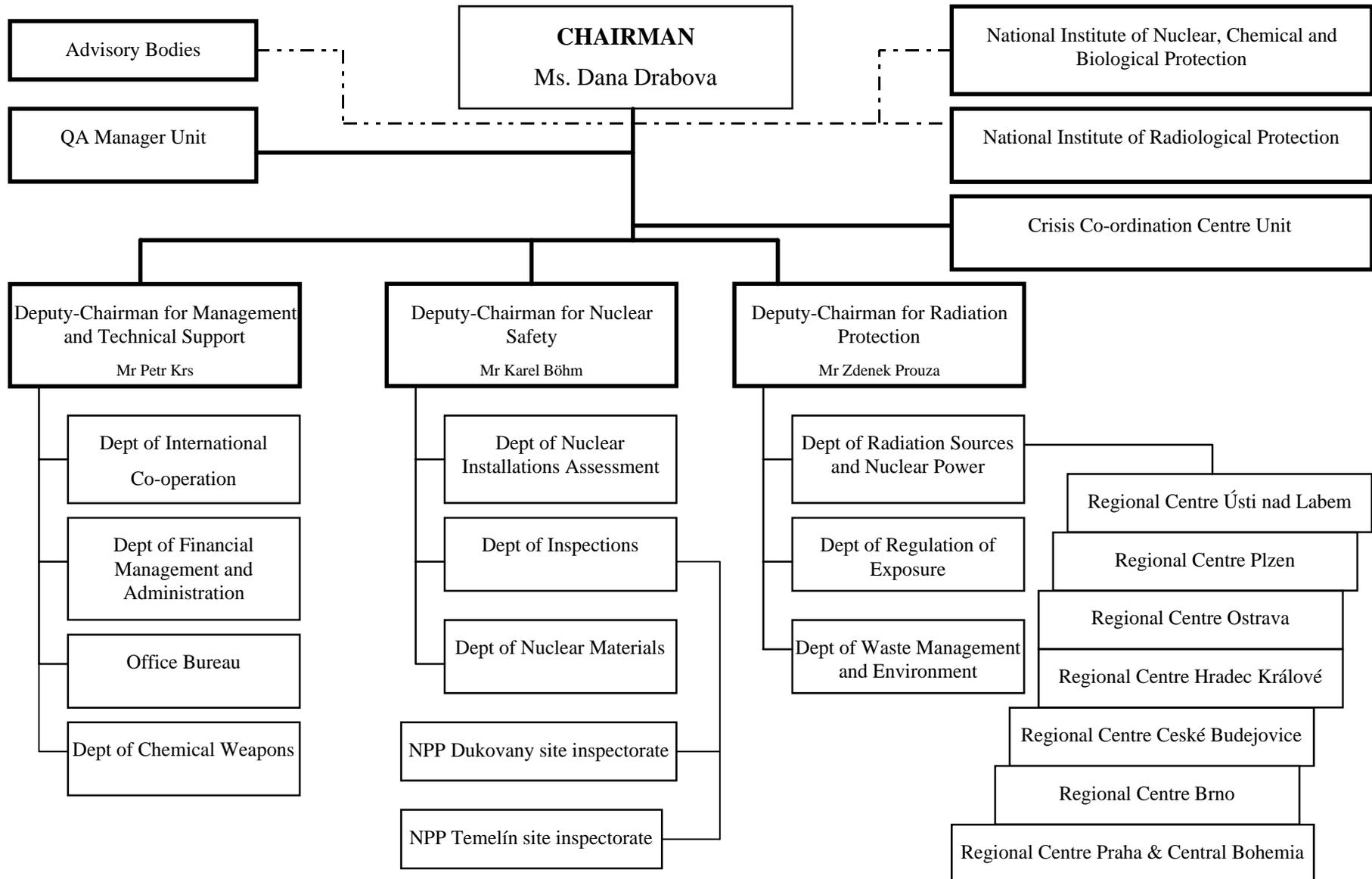


APPENDIX II INTERFACES LICENSING AND PERMIT PROCESS



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APPENDIX III SÚJB ORGANIZATIONAL STRUCTURE



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APPENDIX IV IRRT ADVANCE REFERENCE MATERIAL ACTS AND DECREES

Advance Reference Material

- Act No.18/1997 Coll., on Peaceful Utilisation of Nuclear Energy and Ionising Radiation (Atomic Act)
- Associated Decrees (see table below);
- 1999 Annual Report of the SÚJB;
- National Report of the Czech Republic under the Convention on Nuclear Safety.

| Act | Title |
|--------------------|--|
| No.18/1997 Coll. | Peaceful Utilisation of Nuclear Energy and Ionising Radiation (Atomic Act) |
| No. 50/1976 Coll. | Land Planning and Construction Regulations (Construction Act) |
| No. 244/1992 Coll. | Environmental Impact Assessment |
| No. 106/1999 Coll. | Free Access to Information |
| No. 28/1984 Coll. | State Supervision of Nuclear Safety at Nuclear Installations (State Supervision Act) |
| No. 2/1969 Coll. | Distribution of Competencies within the State Administration |
| No. 71/1967 Coll. | General Administrative Procedures |

| Decree | Title |
|--------------------|---|
| No. 142/1997 Coll. | Type-Approval of Packaging Assemblies for Transport, Storage, and Disposal of Radionuclide Sources and Nuclear Materials, on Type-Approval of Ionising Radiation Sources, and on Type-Approval of Protective Devices for Work Involving Ionising Radiation Sources and other Devices for Ionising Radiation Source Handling (on Type-Approval). |
| No. 143/1997 Coll. | Transportation and Shipment of Specified Nuclear Materials and Specified Radionuclide Sources. |
| No. 144/1997 Coll. | Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification. |
| No. 145/1997 Coll. | Accounting for and Control of Nuclear Materials and their Detailed Specification. |
| No. 146/1997 Coll. | Specifying Activities Directly Affecting Nuclear Safety and Activities Especially Important from Radiation Protection Viewpoint, Requirements on Qualification and Professional Training, on Method to be Used for Verification of Special Professional Competency and for Issue Authorizations to Selected Personnel, and the Form of Documentation to be Approved for Licensing of Expert Training of Selected Personnel. |

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| Decree | Title |
|--------------------|---|
| No. 147/1997 Coll. | Laying Down a List of Selected Items and Dual Use Items in Nuclear Sector. |
| No. 184/1997 Coll. | Radiation Protection Requirements. |
| No. 214/1997 Coll. | Quality Assurance in Activities Related to the Utilisation of Nuclear Energy and in Radiation Activities, and Laying Down Criteria for the Assignment and Categorisation of Classified Equipment into Safety Classes. |
| No. 215/1997 Coll. | Criteria for Siting Nuclear Facilities and Very Significant Ionising Radiation Sources. |
| No. 219/1997 Coll. | Details of Emergency Preparedness of Nuclear Facilities and Workplaces with Ionising Radiation Sources, and on Requirements on the Content of On-Site Emergency Plans and Emergency Rules. |
| No. 106/1998 Coll. | Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities. |
| No. 195/1999 Coll. | Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety Radiation Protection and Emergency Preparedness. |
| No. 196/1999 Coll. | Decommissioning of Nuclear Installations and Working Places with Important and Very Important Sources of Ionizing Radiation. |
| No. 324/1999 Coll. | Establishing Limits of Concentration and Volume of Nuclear Material for which no Provisions for Nuclear Damages are Applicable. |

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**APPENDIX V SÚJB DIRECTIVES/PROCEDURES (VDS) AND
INSTRUCTIONS (VDMI)**

| Document Reference | Title |
|-------------------------------|--|
| VDS 01/1993 (rev. 7/2000) | SÚJB Organizational Rules Appendix 1 Organizational Chart of the State Office for Nuclear Safety Appendix 2 Policy of the State Office for Nuclear Safety Appendix 3 Strategy of the SÚJB Quality System Implementation |
| VDS 02/1993 | Examination Rules of the State Examination Board for Verification of the Special Professional Capabilities of the Nuclear Installations Selected Staff |
| VDS 03/1993 (rev. 2/1998) | Cars service Procedures |
| VDS 04/1993 (rev. 2/2001) | Appendix I Major Personal Obstacles at Work, Authorized Grounds for the Days Off Awarded |
| VDS 05/1993 (rev. 2/1999) | Document & Shredding Rules Appendix I Shredding Register Appendix II List of Employees Names & their Identifications for Purposes of the ISOAD System |
| VDS 06/1993 (rev. 2/2000) | Security Procedures for Operation of the Czech Republic Contact Point in Case of Nuclear or Radiation Accidents Appendix |
| VDS 07/1993 | Procedures for Qualification and Professional education of the SÚJB Staff |
| VDS 08/1993 (rev. 5/2001) | Procedures for Inspection Activities Planning, Execution, and Evaluation Appendix I Record of Inspection – Sample Form Appendix II Inspection Evaluation Note - Sample Form Appendix III Inspection Areas & Evaluation Categories |
| VDS 09/1993 | Procedures for Discarding the Excessive & Out-of-Use Property Administered by the State Office for Nuclear Safety |
| VDS 010/1994 (rev. 4/2000) | Procedures for Management of the SÚJB Budget Funds & Property, Ordering & Testing of the Business Operations, and Circulation of the Accounting Documents |
| VDS 011/1994 | Procedures for Ensuring the State Contracts Commercial Public Tenders |
| VDS 012/1994 | Working Group Status “Czech Republic Nuclear Installations, Meteorological Provision” |
| VDS 013/1994 | Procedures for the SÚJB Site Inspectors’ Working Activities at NPP Dukovany |
| VDS 014/1994 | SÚJB Computer Network Operational Procedures |
| VDS 016/1994 (rev.1/2001) | Procedures on the Documentation Routing Rules in the Field of Crises Management & Assignment of the Staff Members to Face the Special Facts |

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| Document Reference | Title |
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| | <p>Appendix 1 Sample Covering Page Layout of the First Sheet of the Paperwork with Special Facts</p> <p>Appendix 2 Sample Special List of Staff Members</p> <p>Appendix 3 Sample Assignment Record for Contact with Special Facts in the Field of Crises management</p> <p>Appendix 4 Sample “Contact with Special Facts” Authorization</p> |
| VDS 017/1994 (rev. 1/1999) | <p>Procedures on the Staff Responsibilities within the NPP Temelín Safety Analysis Reports Evaluation Process</p> <p>Appendix 1 Distribution of the SÚJB Staff Responsible for Evaluation of the ETE Safety Analysis Reports</p> <p>Appendix 2 Outlines of the Evaluation Report to Be Applied to the Safety Analysis Reports for the ETE Units 1 & 2</p> |
| VDS 018/1994 | <p>Procedures on the SÚJB Staff Responsibilities within the Approval Procedures to Be Applied to NPP Dukovany Operational Safety Analysis Report after Ten Years in Operation</p> |
| VDS 019/1995 (rev. 1/2001) | <p>Procedures “Organizational Rules for Execution of the Contact Point Functions and the Background in Support of the Crises Staff Activities and Crises Management Workplace”</p> |
| VDS 020/1995 | <p>Contracting Procedures in Line with the Act. 199/1994 Sb.</p> |
| VDS 021/1995 (rev. 1/2001) | <p>Procedures – Information Exchange Procedures to Deal with Initiation & Course of Extraordinary event</p> <p>Appendix 1 – Information Exchange Procedures to Deal with Initiation & Course of an Extraordinary event – Extraordinary event Classification Procedures</p> <p>Appendix 2 – Information Exchange Procedures to Deal with Initiation & Course of an Extraordinary event - Forms</p> |
| VDS 022/1995 | <p>Status of the Specialized Commissions to Evaluating the Computation Codes Under the Rule of State Office for Nuclear Safety</p> <p>Appendix 1 – Organizational Backgrounds for the Process “Evaluation of Computation Codes“ within SÚJB</p> |
| VDS 023/1995 | <p>Procedure on Use of SÚJB Funds for Hospitality</p> |
| VDS 024/1995 | <p>SÚJB Internal Inspection Ensuring Procedures</p> |
| VDS 025/1996 | <p>Procedures on Providing the Personal Protection Aids to the SÚJB & SÚRO Staff from the Detached Points of SÚJB</p> <p>Appendix 1 Definition of the Scope of the Personal protection Aids Assigned in Case of the Individual Jobs</p> |
| VDS 026/1996 | <p>Not issued</p> |
| VDS 027/1996 | <p>Procedures for Publishing the SÚJB Editions ”Nuclear Installations Safety“</p> |

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| Document Reference | Title |
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| VDS 028/2001 (rev.1/2001) | Procedures for Preparation of the SÚJB Organizational Standards Appendix 1 Controlled Organizational Standards Identification System Appendix 2 Obligatory Form & Contents of the Controlled Organizational Standards Appendix 3 Sample Dispatch Notes for a Organizational Standard Draft |
| VDS 029/1996 (rev. č.1/1999) – | Procedures on Administration Proceedings in Matters of Levying the Penalties in Accordance to the Act 18/1997 Sb., on Peaceful Utilization of Nuclear Energy & Ionizing Radiation (Atomic Law) and on Changes & Amendments to Some Legislation Appendix 1 Reporting the Commencement of an Administrative Proceedings Appendix 2 Approximate Values Appendix 3 Decisions |
| VDS 030/1996 (rev. 1/2001) | Procedures for Evaluation of Nuclear Safety Analysis Computation Programs Appendix 1 Computation Program Abstract Appendix 2 Examiner's Evaluation of the Programme under Review Appendix 3 Specialized Evaluation Board's Viewpoint to Utilization of the Computation Code under Assessment Appendix 4 Registration of Computation Codes Appendix 5 How to Document the Computation Codes under Review Appendix 6 Staff of the Specialized Evaluation Boards for Reviewing the Computation Codes |
| VDS031/2001 | Procedures on Governing the Activities of the SÚJB Crises Staff Members Appendix 1 Figure 1a CS Chart of Organization Figure 1b Layout of the Room 410 Appendix 2 2a Minutes of Phone Calls 2b Minutes of Phone Calls Training Exercise 2c Fax Form of a Message Destined for a Single Addressee Only in Czech 2d Fax Form of a Message Destined for a Single Addressee Only in English Appendix 3 Information that has to be gathered |
| VDS 032/1997 | Administrative Fees Procedures Appendix Copy of the Administrative Fee Rates |
| VDS 033/1998 | Procedures to Establish the State Examination Board to Verify the Special Professional Capabilities of the Nuclear Installations' Selected Staff Members Appendix 1 Composition of the State Examination Board Appendix 2 Statute of the State Examination Board Appendix 3 Composition of the SÚJB Specialized Examination Boards (rev.1/2001) Appendix 4 Statute of the SÚJB Specialized Examination Boards |
| VDS 034/1998 | Procedures for Business Trips Abroad & Provision of Financial Compensation During These Business Trips. |
| VDS 035/1999 | Procedures on Public and Media Informing |
| <i>Documents below have been produced since the February 2000 Reduced Scope IRRT</i> | |
| VDS 036/2001 | Procedures on Internal Activities Reviews & Evaluations |

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| Document Reference | Title |
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| VDS 037/2001 | Inspections Procedures Appendix 1 Inspector's Code of Ethics |
| VDS 038/2001 | Administrative Proceedings Procedures |
| VDS 039/2001 | Procedures on the SÚJB Staff Training System |
| VDS 040/2001 | Rules for performance of radiation protection controls at nuclear power plants |
| VDS 043/2001 | Procedures on Planning, Preparation, Execution, and Evaluation of Inspection Activities Section of Radiation Protection Appendix 1 Inspection Authorization, Sample Form Appendix 2 Inspection Announcement, Sample Form Appendix 3 Record of Inspection Form Appendix 4 Evaluation of Inspections Appendix 5 Reports of Inspections |
| VDS 044/2001 | Metrological Rules Procedures |
| VDS 045/2001 | Procedures on the Controlled Documentation Rules |
| VDS 046/2001 | Procedural Procedures for Awarding the Licenses on Commissioning of the Nuclear Installations |
| VDS 047/2001 | Issue of Permissions and other Decisions |
| VDS 049/2001 | Procedures on Communications Rules during the Evaluation and Inspection Activities |
| VDMI 001/1999 | Unit Control Prior to Start-up to MKV in accordance to the Act 18/97 Coll. § 13, par. 3, letter d), Appendix e) |
| VDMI 002/2000 rev. 1 | Review of the Programmes for Commissioning of NPP Temelín |
| VDMI 003/2000 rev. 1 | Inspection of NPP Reactor Units Start-up Phases |
| VDMI 004/2000 | SÚJB Local Inspectors' Working Activities at ETE |
| VDMI 6/2001 | Information for Inspection of the Nuclear Energy Installations' Accident Preparedness |
| VDMI 7/2001 | Methodical instruction for the control of monitoring of discharges of nuclear power plants |
| VDMI 8/2001 | Methodical instruction for the control of monitoring of discharges of nuclear power plants |
| VDMI 9/2001 | Methodical instruction for control of provision of personal monitoring in NPPs Dukovany and Temelín |

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| Document Reference | Title |
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| VDMI 11/2001 | Methodical instruction for the control of monitoring of nuclear power plants surroundings |
| VDMI 12/2001 | Instructions for Servicing the Surveillance of Data Transmission and Recording into the Emergency Response Centre (KKC) SÚJB Central Data Archive Appendix 1 Overview of the SQL Commands & Their Use Appendix 2 Sample Printout of the Report Output into the ORACLE Tables Appendix 3 List of Appointed Responsible Staff Members |
| VDMI 13/2001 | Instructions for Ensuring the Data Transmission from NPP Dukovany Appendix 1 List of Appointed Responsible Staff Members |
| VDMI 15/2001 | Inspection Manual Controlling the Ways to Ensure the Physical Protection of the Nuclear Materials, Nuclear Installations, and Transportation of Nuclear Equipment & Nuclear Materials |
| VDMI 16/2001 | Inspection Manual for Inspection the Store of NPP Temelín's Fresh Nuclear Fuels |
| VDMI 17/2001 | Inspection Guide for Inspection the Spent Fuel Interim Store age Facility in Dukovany |
| VDMI 18/2001 | Inspection Guide for Inspection the Operation of the Spent Fuel Store age for fuel from the Research Reactors |
| VDMI 19/2001 | Inspection Manual for Inspection the Transportation of Radioactive Materials of Packages |
| VDMI 20/2001 | Inspection Manual for Inspection the Quality of the Production |
| VDMI 21/2001 | Manual for Inspection Activities in the Field of Nuclear Materials Reviews |
| VDMI 22/2001 | Execution of Inspection Activities in the field of Nuclear Items Imports/Exports Verification |
| VDMI 23/2001 | Inspection manual for supervision over treatment of radioactive waste in nuclear facilities |
| VDMI 24/2001 | Review of the List of Selected NPP Equipment |
| VDMI 25/2001 | Instruction for conducting of inspection on nuclear medicine workplaces Appendix 1 Orientation of Inspections & their Execution Procedures Appendix 2 Inspection Sheet for an Nuclear Medicine Workplace |
| VDMI 26/2001 | Instructions for conducting of inspection open source of radioactivity (OSR) Appendix 1 – Aims of the Inspections & their Actual Execution Appendix 2 – Inspection Sheet for the OSR Class I Workstation Appendix 3 – Inspection Sheet for the OSR Class II & Higher Workplaces |

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| Document Reference | Title |
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| VDMI 27/2001 | Instructions manual for inspections at workplaces with radiotherapeutical sources of ionizing radiation Appendix 1 – Focus of the Inspections & their Actual Execution Appendix 2 – RT Inspection Sheets |
| VDMI 28/2001 | Instruction for conducting of inspection at workplaces with radio-diagnostic X-ray sources of ionizing radiation used in human and veterinary medicine Appendix 1 – List of the Items for Individual Methods under 3.2 Appendix 2 – Inspection Sheet for an RDG Station Appendix 3 – Inspection Sheet for a Dentist RDG Station Appendix 4 – Inspection Sheet for a Veterinary RDG Station |
| VDMI 29/2001 | Instructions for carrying out inspections of activities of approved persons licensed for measurement of parameters and characteristics of industrial sources of ionizing radiation and of sealed radiation sources Appendix 1 – Inspection Sheet |
| VDMI 30/2001 | Methodology of control activity at workplaces with industrial sources of ionising radiation (with generators of radiation and closed radionuclide sources) Appendix 1 – “Industry” Inspection Sheets & their Use Appendix 2 – Evaluations of Non-conformities Resulted from the Inspections Appendix 3 – Dispatch Note of the Inspection Appendix 4 – Control Measurement Execution |
| VDMI 31/2001 | Inspection Activities Methodology at the Announcers of the Type Approved Small Sources Open Source of Radioactivity Appendix 1 Inspections Execution Procedures Appendix 2 Inspection Sheet of the Announcer of Use of the Type Approved Small Generators Open Source of Radioactivity |
| VDMI 32/2001 | Methodology of control activity of water suppliers into public water supplies, producers of packed water and producers and importers of construction materials Appendix 1 Inspection sheets for Inspection of Water Suppliers’ into the Public Water Mains Appendix 2 Inspection sheets for Inspection of the Procedure and Importers of Constructions Materials. |
| VDMI 33/2001 | Methodology of control activity at operators of workplaces with increased risk of natural exposure Appendix 1 Inspection Sheet for the Premise with Increased Natural Irradiation Risks |
| VDMI 34/2001 | Inspection Activity Methodology for License Holders Authorized to Handle Radioactive Waste for Waste Management Activity |
| VDMI 35/2001 | Inspection Activity Methodology for Originators of Radioactive Waste |
| VDMI 36/2001 | Inspection Activity Methodology for License Holders Authorized to Manage Radioactive Waste for the Activity of Waste Deposition |

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| Document Reference | Title |
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| VDMI 37/2001 | Inspection Activity Methodology for Inspection of Activity in the Uranium Industry & Organizations Operating Mining Activities, which Might Result in Irradiation of the Personnel or Environment Appendix 1 Orientation of Inspections & Procedure for their Conduction Appendix 2 Sample of Authorization to Inspect OU Appendix 3 Sample of Inspection Commencement Report Appendix 4 Sample of Attachment to an Inspection Report Appendix 5 Sample of Announcement of Verbal Negotiation to Discuss the Measurement Results Appendix 6 Report of Verbal Negotiation |
| VDMI 38/2001 | Inspection Activity Methodology of License Holders for the Activity Measurement & Evaluation of Radon and Its Conversion Product Occurrence on the Building Land Lots & Building Sites Measurement & Assessment of the Natural Radio Nuclide Contents in the Building Materials and in Water Appendix 1 Inspection Sheet |
| VDMI 39/2001 | Inspection Activity Methodology for Execution of the Personnel Radiation Protection Control with the Authorizations to Carry out the pz and zds in the Field of Radio-diagnosing. Appendix 1 Inspection Measurement Report Appendix 2 Inspection Sheet |
| VDMI 40/2001 | Methodology of control activity of holders of permissions for qualified training of selected employees of workplaces with sources of ionising radiation. Appendix 1 Inspection Sheets |
| VDMI 41/2001 | Methodology of control activity at persons performing personal dosimetry services Appendix 1 – Description of the Inspection Activities in Case of the Persons Serving in the Field of Personnel Dosimetry Appendix 2 – Inspection Sheet |
| VDMI 42/2001 | Quality Systems Evaluation Appendix 1 – List of Questions Appendix 2 – Inspection Sheet Appendix 3 – Evaluation Sheet |
| VDMI 43/2001 | SÚJB Inspectors' Activity – not yet available |
| VDMI 44/2001 | Inspections of Operation & Conditions of NPP Unit Systems |
| VDMI 46/2001 | Documentation Assessment in Licensing the Reconstruction or Other Changes Affecting the Nuclear Safety, Radiation Protection, Physical Protection, and Accident Readiness |
| VDMI 47/2001 | Inspection Procedures for Realization of the Reconstruction or Other Changes Affecting the Nuclear Safety, Radiation Protection, Physical Protection, and Emergency Preparedness. |
| VDMI 48/2001 | Checks of Proofs of Nuclear Installations Personnel Readiness |

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APPENDIX VI GUIDES ISSUED BY SUJB TO THE LICENSEES

| SÚJB GUIDELINES (BLUE LINE) | |
|------------------------------------|--|
| I | Methodical Instructions & Recommendations (<i>without stripes</i>) |
| II | Safety Instructions (<i>blue line with green stripes</i>) |
| III | Legislative Regulation (<i>blue line with red stripes</i>) |

| I Methodical Instructions & Recommendations (<i>without stripes</i>) | |
|--|---------------|
| Title | Year of Issue |
| List of Titles Issued within the Editorial Series “Safety of Nuclear Installations” during the years 1975-1993 | 1994 |
| Tolerability of NPP Risks | 1994 |
| Principles of NPP Safety Analyses | 1994 |
| Ensuring & Maintaining of NPP Staff’s Qualification | 1994 |
| Fire Risk Analysis in NPPs with VVER Reactors | 1995 |
| Evaluation of Realization & Efficiency of NPP Fire Safety Comprehensive Measures | 1995 |
| Evaluation of Fire Risk Analyses for NPP | 1995 |
| Inspection of the Fire Protection Measures and Capability to Improve Fires in NPPs | 1995 |
| Quality System Implementation For Utilization of the Major Ionizing Radiation Generators in the Radio Therapy – Electron Accelerators | 1998 |
| Quality System Implementation For Utilization of the Major Ionizing Radiation Generators in the Radio Therapy – Radio Nuclide Irradiators | 1998 |
| Quality Inspection of the Radio Diagnosing Methods in Stomatology | 1998 |
| Methodology for Measuring and Evaluation of the Natural Radionuclides Contents on the Building Land, Building Sites, and in Building Materials | 1998 |
| Instructions & Recommendations for life-expectancy evaluation of the VVER NPP Pressurized Vessels & Reactor Inner Sections | 1998 |

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| I Methodical Instructions & Recommendations (without stripes) | |
|--|----------------------|
| Title | Year of Issue |
| Requirements for Detection of Fuel Leaks from Reactor Primary Circuit with the LBB (Leak Before Break) Method Applied | 1998 |
| Instructions & Recommendations for Qualification of the Vital Equipment for Safety of NPPs of the VVER 440/213 type | 1998 |
| Erosive Corrosion of the VVER NPP Secondary Circuits – Long-term Monitoring Programme | 1998 |
| Methodology for Qualification of Service Inspections of Primary Circuit Vital Components in NPPs of the VVER Type | 1998 |
| Quality System Implementation in Use of the Ionizing Radiation Major Sources in Radiotherapy – Closed Radionuclide Radiators in Brachytherapy | 1998 |
| Quality System Implementation in Use of the Ionizing Radiation Major Sources in Radiotherapy – Radiological Events | 1999 |
| Quality Assurance System on the Nuclear Medicine Premises – Instrumentation | 1999 |
| Radiation protection Requirements for the Organizations Active in Mining Which May Result in Irradiation of the Workers, Inhabitants, or Environment | 1999 |
| Ensuring the Transition to 2000 by the License Holders Authorized to Handle the Ionizing Radiation Sources within the Medical Applications | 1999 |
| Contents of the Safety Analysis Report Specifications for Permission to Locate the Radioactive Waste Deposition Dump | 1999 |
| Preparation of the Quality Assurance Programme for Execution of the Prescribed Tests on the Ionizing Radiation Sources | 1999 |
| SÚJB Requirements Applicable to Execution of the Paliative Therapy on the Nuclear Medicine Premises | 1999 |
| Zásady tvorby traumatologických plánů jaderných zařízení a pracovišť se zdroji ionizujícího záření | 1999 |
| Quality Assurance System Implementation in Using of the Ionizing Radiation Major Sources in Radiotherapy | 1999 |
| Supplying Entities' Activities in the Controlled Zone Areas of the Holders of the Ionizing Radiation Sources Sample of the "Quality Assurance Programme" | 1999 |
| SÚJB Requirements Applicable to Execution of the Thyroidal Therapy with Radio Iodine on the Nuclear Medicine Premises | 2000 |

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| I Methodical Instructions & Recommendations (<i>without stripes</i>) | |
|--|----------------------|
| Title | Year of Issue |
| Quality System Implementation in Using of the Ionizing Radiation Major Sources in Radiotherapy – X-ray Radiators | 2000 |
| Procedures for Calculations of Personnel Irradiation Rates in Connection with Release of the Natural Radionuclides into Environment and for Evaluation of the Impact in the Areas with Terminated Mining | 2000 |
| Requirements for the Inspection & Testing Processes in the Field of Radiation protection in Radiology, Visualization Process in Mamography – Tests for Operational Stability | 2000 |
| Preparation of the Quality Assurance Programme for Application of the Ionizing Radiation Sources in Medicine – General X-ray Diagnostics a Stomatological Premises. | 2001 |
| Preparation of the Quality Assurance Programme for Application of the Ionizing Radiation Sources in Industry – Industrial Analyzers & Indicators, Defectoscopy, Carding Premises, Industrial Irradiators | 2001 |
| II Safety Instruction (<i>blue line with green stripes</i>) | |
| Title | Year of Issue |
| SÚJB Viewpoint to Applicability of NTD A.S.I.-III-Z-5/96 <i>BN 05.01</i> | 1998 |
| Textbooks and Sets of Questions for Preparation and Training of the Selected Staff of the Nuclear Research Installations <i>BN 001</i> | 1994 |
| Instructions for Specialized Preparation & Training of Staff Members for their Jobs/Positions at NPPs in the Czech Republic <i>BN 01.1</i> | 1995 |
| INES International Scale for Evaluation of Major Nuclear Events <i>BN 02.1</i> | 1995 |
| Safety Instructions: Periodic Review of the Safety of NPP in Operation – <i>BN 01.2</i> | 2001 |
| Legislative Regulation (<i>blue line with red stripes</i>) | |
| Title | Year of Issue |
| Selected Legislative Regulations in the Field of Nuclear Power Peaceful Utilization in the Czech Republic | 1999 |

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APPENDIX VII SYNOPSIS OF RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Recommendations

- R.1.** In future revisions of the Atomic Act the SÚJB should advise Government and the Parliament on the need for amendment of Article 14, and in particular paragraph 14.3(d), necessary to eliminate any time constraints on the regulatory body decision making process.
- R.2.** The Czech Government should ensure that the authority responsible for the privatisation process of NPPs consults the SÚJB with regard to the implications on safety in the development of the relevant tender documents.
- R.3.** The SÚJB management should encourage the personnel to participate in the development of new data base of the decisions “Registry of Decisions” and to use this data base to improve the efficiency of the regulatory body.
- R.4.** The SÚJB should develop and implement a strategy for complementary use of deterministic and probabilistic analyses in safety assessment.
- R.5.** SÚJB should expand their inspection programme to include a review of the licensee’s audit/self-assessment programme. The purpose would be to determine whether the licensee is adequately correcting identified problems.
- R.6.** SÚJB should formalize their arrangements for witnessing and commenting on the adequacy of on site emergency preparedness performance during exercises. As a part of this, SÚJB should formalize the instructions to individuals observing exercises.
- R.7.** SÚJB should require that the operators take into account in future the further minimization of the volume of organic radioactive waste e.g. incineration.
- R.8.** SÚJB should work with the Government to ensure adequate and consistent state supervision of the Ministry of Defence radiation sources where such sources are used for medical, industrial, education or other peaceful purposes/practices.
- R.9** For certain radiation practices/activities SÚJB, as it’s carried out for other very significant sources (e.g. reactors, radioactive waste management) should require periodical exercises of the emergency plans approved, as appropriate. SÚJB should request information on the results of the implementation of such exercises and/or check directly their implementation when it’s necessary.
- R.10.** The SÚJB should communicate quickly to all consignors transporting radioactive material within, into, out of, or through the Czech Republic concerning the changes that are being made to the Regulations. This communication should emphasize guidance on proper marking of packages for low radioactive material contents (e.g., radiopharmaceuticals) which do not require certification and the need to change, in a timely fashion, to the use of the new UN Numbers and Proper Shipping Names.

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Suggestions

- S.1. It is suggested to include in the individual training plans criteria for successful completion of the training activities and to review the implementation of the new training policy in a year in accordance with the SÚJB new QA policy.
- S.2. Consideration should be given to including in the plans for individual training some modules on the latest technological developments and new safety concepts, e.g. safety culture, quality assurance management, human factors, risk-informed decision making, team work, development of communication skills.
- S.3. The SÚJB management should consider QA seminars for the whole staff as a useful tool to support the acceptance and implementation of the new QA system.
- S.4. SÚJB should consider preparing a strategy for development of future capabilities for assessment of human and organisational aspects of the operation of NPPs.
- S.5. SÚJB should consider reviewing its research and development strategy to ensure that possible future needs are taken into account.
- S.6. SÚJB should define a process for factoring risk information into the development of the 6 month inspection programme and for selected samples during individual inspection planning.
- S.7. SÚJB should include system based inspections as part of the plan. For example, over a four year period, SÚJB should ensure that they have inspected the complete system. An example of a system would be the essential portion of the electrical power system that supplies power to the NPP safety systems.
- S.8. When formulating the 6 month inspection programme in Nuclear Safety section, SÚJB should consider including inspection of the licensee's processes. For example, inspection of the overall effectiveness of the licensee's maintenance process, related to nuclear safety.
- S.9. SÚJB should ensure consistency between the overall inspection programme for both NPP sites, when Temelín becomes operational.
- S.10. SÚJB should continue to develop a comprehensive succession plan to aid in maintaining staff competencies.
- S.11. The SÚJB should consider developing a procedure for performing periodic review and update of the decrees.
- S.12. The SÚJB should consider reviewing all the different agreements with the licensees e.g. on the event reporting, categorisation of modifications, format and content of safety demonstration and issuing appropriate guide(s) which would prescribe related procedures.
- S.13. SÚJB should consider modification of decrees and/or procedures as appropriate to require the demonstration of emergency plan changes prior to their implementation at licensee facilities in order to ensure that the revised EP plans remain effective.

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Suggestions

- S.14. SÚJB should continue to complete the training programme for each of the new crisis management team member functions prior to changing over to the new arrangements and the SÚJB guidance documentation should include a description of the activities to be performed by each function.
- S.15. SÚJB should work with the other crisis management authorities to establish a feedback process of the status of SÚJB's countermeasure recommendations, made during an event.
- S.16. SÚJB should incorporate attendance by inspectors at selected licensee meetings into the inspection programme. This will allow the inspectors to gain insight at how the NPPs ensure that safety is paramount.
- S.17. The recent international recommendations regarding the categorisation of radiation sources (e.g. IAEA-TECDOC-1191 published in December 2000) should be taken into account during the revision/update of the requirements currently set out for the classification of sources in the Decree No. 184/1997 Coll. (Article 6).
- S.18. SÚJB should incorporate the information on the results of the regulatory inspections that are available in the existing databases of the Regional Offices to the existing centralized register.
- S.19. SÚJB should organize/implement meetings on safety culture with senior managers of the regulated facilities/activities where these meetings are not already being held e.g. radiotherapy
- S.20. Consideration should be given to issuing updated information on the transport regulatory structure in the Czech Republic reflecting new regulatory requirements in TS-R-1 coming into force from 1 July 2001, as an information document to all consignors, carriers and consignees in the Czech Republic involved in the transport of radioactive material.
- S.21. The SÚJB should consider expediting translation of TECDOC-1194 into the Czech language and making this guidance available to all of the consignors and carriers involved in the transport of radioactive material in the Czech Republic.
- S.22. The SÚJB should review its policy concerning those shipments that are being inspected, and those that are not, to ensure that all types and aspects of shipments which do not require SÚJB permission under para. 9.1.m of the Act No. 18/1997 Coll. are periodically inspected consistent with the guidelines of paras 462 and 463 of Safety Series No. 112 and paras 5.14 and 5.15 of GS-R-1.
- S.23. SÚJB should consider nominating its headquarters and regional inspector staff to be trained at the European regional training course on transport safety periodically offered by the IAEA.
- S.24. The SÚJB should consider undertaking testing of its transport emergency capabilities beyond simply testing communications systems or capabilities for large package transport. It should ensure it has undertaken comprehensive planning and should consider undertaking drills and exercises and implementing other features of planning and preparing for transport emergencies as documented in the draft of TS-G-1.2, especially for small radioactive material transport packages.

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Good Practices

- G.1.** The Czech Government has established all legal prerequisites for and found the effective mechanisms to ensure “de jure” and “de facto” the independence of the SÚJB.
- G.2.** The well established process of formal and informal meetings between the SÚJB and the NPP’s management in an organized and systematic manner continuously builds on the established mutual respect and understanding.
- G.3.** The SÚJB has spent a lot of effort and resources to ensure that its authorities, responsibilities, policies, objectives and strategies related to safety are clearly understood and communicated to the public in the Czech Republic as well as in the interested neighbouring countries. Establishing a specialized group on public relation is considered a good practice.
- G.4.** The SÚJB has established a very effective communication line with the US NRC to receive support in the licensing process for NPP Temelín. In addition, SÚJB inspectors have received training at the USDOE laboratories and USNRC inspector training centre on the basis of the bilateral agreement between the two regulatory bodies.
- G.5.** The SÚJB has developed a new training policy, which takes into account the needs of the organization and the individual as well as recent scientific and technological development. The new training programme is tailored to the individual employee’s needs and their role in the regulatory body.
- G.6.** The SÚJB has established a good strategy for implementation of a new quality management in line with the latest international developments in this field.
- G.7** SÚJB has formed a Commission for validating computer codes, which are used in the safety assessments. Use of validated computer codes in the licensing process increases its efficiency and reduces the pressure to the regulator and licensee
- G.8.** SÚJB took the initiative to commission an independent analysis in support of their assessment which resulted in improvements to the operational reliability of the existing I&C systems at NPP Dukovany.
- G.9.** The Department of Inspection discusses operational events and issues on a daily basis simultaneously with both NPP resident site inspectors.
- G.10.** The review of all protocols for appropriate follow up and for consistency during a monthly meeting between all inspectors and managers who authored a protocol during the month.
- G.11.** Online radiation monitoring system, with detectors fixed in certain environment locations that are used to relay the same data to the SÚJB crisis management centre, local authorities and to Austria
- G.12.** SÚJB and NPP Dukovany agreed to forbid the use of PVC in the controlled area of the plant.

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Good Practices

- G.13.** Establishment of the Nuclear Account for financing the activities of RAWRA which is a state owned agency engaged in preparation, construction, commissioning, operation and closure of radioactive waste repositories. Payments have to be made from the generators of radioactive waste.
- G.14.** SÚJB requires that the operators actualise the decommissioning plans periodically after 5 years and according to this to adjust the annual financial delivery to the reserve fund for decommissioning.
- G.15.** SÚJB is implementing, complementary to the control carried out by the licensee, an independent regulatory audit for planning purposes related to the protection of patients with the full technical support of the National Radiation Protection Institute
- G.16.** The Atomic Act No. 18/1997 Coll. fully takes into account the principles established in the IAEA Safety Fundamentals SS120. In addition, during the development of decrees/guidance SÚJB is appropriately considering and using the current international standards for radiation, waste and transport safety as well as other safety related publications published by the IAEA.
- G.17.** SÚJB has established a comprehensive centralized register with the whole inventory of radiation sources at the national level which provides the regulator with an effective tool for the identification and/or localisation of any source.
- G.18.** SÚJB has established specialized inspection groups which are carried out in general with the participation of SÚJB inspectors from different Regional Offices. These groups allow a highly qualified assessment of the radiation protection and safety issues in the facilities inspected and an opportunity to share knowledge and experience.
- G.19.** SÚJB has achieved improved understanding of safety practices by establishing lines of communication with senior management of nuclear medicine facilities e.g. the organisation of special meetings on the priority of safety issues.
- G.20.** SÚJB applies a conservative and graded approach to controlling radioactive material transport which enhances the safety of transport and encourages all involved to be fully conscious of the need for a sound safety culture.
- G.21.** The requirement to have a radiation protection programme as part of the documentation in each transportation authorization issued by SÚJB provides a sound basis for ensuring radiation protection and fostering a radiation safety culture by consignors, carriers and consignees.

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**APPENDIX VIII PROGRESS WITH RESOLVING RECOMMENDATIONS
AND SUGGESTIONS FROM THE FEBRUARY 2000 REDUCED SCOPE IRRT**

| Report Section | No. | Recommendation / Suggestion | Action to-date | Status |
|-----------------------|------------|---|---|---------------|
| 1.1.6.1.a | R.1. | The operational license for Temelín, when granted, should include a requirement for a periodic safety review (PSR) to be carried out every 10 years. The PSR should include evaluations based on a balance of deterministic and probabilistic analysis. | SÚJB has translated the IAEA guide on PSR and they will follow the guidance in presenting the requirements of the PSR after refuelling. | Closed |
| 1.7.1.a | R.2. | SÚJB should be able to acquire external expertise when and as far as it is necessary. To facilitate the availability of long term competence, in order to manage the balance between key competencies available either within SÚJB or in supporting organizations, SÚJB should be able to contract external expertise without any time limits in the contracts <ul style="list-style-type: none"> •select the consulted experts by the principle of best available expertise in respect to the objects to be evaluated •build up long term co-operation with capable experts of technical or scientific organisations in order to retain access to enough independent expertise. | The Ministry of Finance has revised its policies and agreed that the SÚJB can sign long term contracts (up to 10 years) with a clause that funds are subject to a yearly approval. This arrangement is consistent and within the constraints of the existing legislation. | Closed |
| 2.3.1.b | R.3. | SÚJB should review the internal processes associated with review and assessment, authorization, inspection and enforcement, and ensure these are documented in the QA system. | Procedures VDS 046, VDS 049 and VDMI046 have been developed. | Closed |
| 3.1.1.(1)a | R.4. | SÚJB complete development of an inspection manual which contains instructions for the implementation of the inspection programme including: (1) areas to be the subject of inspection, (2) method of inspection to be used, (3) selection of inspection samples, (4) relevant technical information and questionnaires. | SÚJB has developed procedures that describe the overall inspection programme and developed procedures that serve as a checklist for individual inspections. Although each group (e.g. the NPP inspectorate) have copies of these they are also on the SÚJB Internet web site, it is not clear as to which document defines the complete official set. In Radiation Protection VDS 040, there is a description of the complete set of procedures and reference documentation. This serves as an Inspection Manual in that area. SÚJB has developed procedures that describe the overall inspection programme and developed procedures that serve as a checklist for individual inspections. This satisfies the four parts of the recommendation. | Closed |

RESTRICTED

| Report Section | No. | Recommendation / Suggestion | Action to-date | Status |
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| 3.4.1(1)a | R.5. | SÚJB should further develop and implement a systematic programme for inspection that ensures all appropriate areas are inspected on a periodic basis. The programme should also define the expected level of effort associated with each of the inspection activities. | SÚJB has included sub-areas in the planned 6 month programme. | Closed |
| 3.4.2(1)a | R.6. | SÚJB should perform an assessment of the management system effectiveness at NPP Temelín. This assessment should review the ability of plant management to progress for supervising construction to supervising plant operation and its arrangements for doing so. | SÚJB performed an inspection by the QA department. Requirements have been placed in protocols and the internal procedures at the plant have been reviewed. | Closed |
| 3.5.1(1) a | R.7. | SÚJB should implement a system to audit, review and monitor all inspection and enforcement activities as described in paragraph 705 Draft IAEA SSS, "Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body." | Not reviewed during the IRRT. | Open |
| 1.1.5.1.a | S.1. | SÚJB should consider what could be done to ensure that there is proper co-ordination between different governmental bodies at the additional permit stages and for reactor pressure vessel inspections at the relevant main licensing stages. | SÚJB has started negotiations on the subject with the Ministry of Social Affairs. No problems in practice. | |
| 1.3.1.a | S.2. | Suggestion: SÚJB could take benefit from relevant documents on format and content of documents to be submitted in applications for an authorization which have been published by various regulatory bodies . | SÚJB considers that there is no need for additional guidance in this area due to the fact that the agreements on major modifications have been made with NPP Dukovany. | |
| 1.4.1.b | S.3. | The procedure for defining regulatory actions based on categorisation of modifications applied at NPP Dukovany should also be implemented in the regulatory process during the operational phase for NPP Temelín. | An agreement with NPP Temelín was made in July 2000. | Closed |
| 3.1.1 (2) a | S.4. | SÚJB should develop instructions for the standards of conduct for inspectors as described in the paragraphs 503 and 504 of IAEA Safety Guide (50-SG-G4, Rev 1). | SÚJB has included this recommendation into internal procedure VDS 037. | Closed |
| 3.2.1(1)a | S.5. | SÚJB should consider development and implementation of guidance which describes the ways in which inspector objectivity can be assured. | SÚJB has addressed this suggestion by (1) resident inspectors visiting other sites; (2) regular meetings are held with all the inspectors; (3) they review each protocol during the monthly evaluation board | Closed |

RESTRICTED

| Report Section | No. | Recommendation / Suggestion | Action to-date | Status |
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| 3.3.1.a | S.6. | SÚJB should revise the resident inspector guidance for routine inspections to cover all areas included for observation recommended in paragraph 512 of IAEA Safety Guide (50-SG-G4, Rev 1). The revised guidance should be used consistently at both NPP sites. | SÚJB has revised some of the guidance to inspectors. For example there are now procedures (i.e. inspection manual) in the areas of control room observation, Technical Specification surveillance observation and safety system observation. Guidance as yet for the other areas in para 512 has not been identified. | Open |
| 3.5.1(2)a | S.7. | SÚJB should consider development and implementation of a system that tracks the status of identified deficiencies, in particular, written reports submitted by the licensee to SÚJB as required by Technical Specifications. | Not reviewed during the IRRT. | Open |
| 3.7.2.1a | S.8. | SÚJB should further develop and formalise its readiness assessment programme to support key licensing approval stages. | VDS 049/2001 has been written as general guidance. | Closed |
| 3.9.2.1a | S.9. | SÚJB to keep the government apprised of the relationship between salaries in the regulated industry and its ability. | The Government has been informed of the facts. The SÚJB salaries are amongst the highest in the Czech Civil Service. | Closed |

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APPENDIX IX TEAM COMPOSITION

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| Mr. P. J Hughes, Team Leader | Safety Assessment Section, Department of Nuclear Safety, IAEA |
| Mr. A. Schröder | Ministry for Environment and Transport, Baden-Württemberg, Germany |
| Ms. V. Rangelova | Safety Assessment Section, Department of Nuclear Safety, IAEA |
| Ms. M-L Järvinen | Radiation and Nuclear Safety Authority of Finland (STUK) |
| Mr. M. Levstek | Slovenian Nuclear Safety Administration, Slovenia |
| Mr. B. Mallett | US Nuclear Regulatory Commission |
| Mr. B. J. Williams | HSE, Nuclear Installations Inspectorate, UK |
| Mr. F. Kaufmann | HSK, Switzerland |
| Mr. A. Bilbao-Alfonso | Radiation Safety Section, Head of Regulatory Infrastructure Working Group, Department of Nuclear Safety, IAEA |
| Mr. R. Pope | Radiation Safety Section, Head of Transport Safety Unit, Department of Nuclear Safety, IAEA |
| Mr. V. Kurghinyan (observer) | Armenian Nuclear Regulatory Authority, Armenia |
| Mr. J-K, Hohenberg (observer) | Federal Ministry of Agriculture, Forestry, Environment and Water Management, Vienna, Austria |