



**INTEGRATED
REGULATORY
REVIEW SERVICE (IRRS)
MISSION
TO
SLOVAKIA**

Bratislava, Slovakia

27 May to 7 June 2012

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY



**NUCLEAR REGULATORY AUTHORITY
OF THE SLOVAK REPUBLIC**



Regulation of nuclear safety is our mission ...





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Mission date: *27 May to 7 June 2012*
Regulatory body: *NUCLEAR REGULATORY AUTHORITY OF THE SLOVAK REPUBLIC - UJD SR*
Location: *UJD SR/UVZ SR - HQ in Bratislava & UJD SR PREMISES in Trnava, SLOVAKIA*
Regulated facilities and *Nuclear power plants, RadWaste facilities, Environmental monitoring laboratory*
Organized by: *International Atomic Energy Agency (IAEA)*

IRRS REVIEW TEAM

STRITAR Andrej	Team Leader (Slovenia)
MYKOLAICHUK Olena	Deputy Team Leader (Ukraine)
ADORJAN Ferenc	Reviewer (Hungary)
ALLAIN Olivier	Reviewer (France)
BACIU Adriana Celestina	Reviewer (Romania)
BLOMMAERT Walter	Reviewer (Belgium)
FURTEK Andrzej	Observer (Poland)
HEDBERG Bengt	Reviewer (Sweden)
HUNT John	Reviewer (Brazil)
NOVACKOVA Magdalena	Reviewer (Czech Republic)
PALTEMAA Risto	Reviewer (Finland)
REIERSEN Craig	Reviewer (United Kingdom)
SUNG Key Yong	Reviewer (Republic of Korea)
JUBIN Jean-Rene	IRRS Coordinator (IAEA)
MANSOUX Hilaire	IRRS Deputy Coordinator (IAEA)
LUX Ivan	IRRS Review Area Facilitator (IAEA)
KUTKOV Vladimir	IRRS Review Area Facilitator (IAEA)
UBANI Martyn O.	IRRS Administrative Assistant (IAEA)
DANI Mario	IRRS Administrative Observer (IAEA)

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

CONTENT

EXECUTIVE SUMMARY	7
I. INTRODUCTION.....	9
II. OBJECTIVE AND SCOPE	10
III. BASIS FOR THE REVIEW	11
1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT.....	13
1.1. NATIONAL POLICY AND STRATEGY	13
1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	14
1.3. ESTABLISHMENT OF A REGULATORY BODY.....	14
1.4. INDEPENDENCE OF THE REGULATORY BODY	14
1.5. PRIME RESPONSIBILITY FOR SAFETY	15
1.6. COMPLIANCE AND RESPONSIBILITY FOR SAFETY	15
1.7. COORDINATION OF DIFFERENT AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK	16
1.8. COMPETENCE FOR SAFETY	18
1.9. PROVISION OF TECHNICAL SERVICES	19
POLICY ISSUE – STATUS OF A REGULATORY BODY IN THE STATE ADMINISTRATION	20
2. GLOBAL NUCLEAR SAFETY REGIME.....	21
2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR COOPERATION	21
2.2. SHARING OF OPERATING AND REGULATORY EXPERIENCE	21
3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	23
3.1. ORGANISATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES	23
3.2. EFFECTIVE INDEPENDENCE DURING CONDUCT OF REGULATORY ACTIVITIES	23
3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY	24
3.4. TRAINING & COMPETENCE ARRANGEMENTS	24
3.5. ADVISORY BODIES.....	25
3.6. USE OF TECHNICAL SUPPORT	26
3.7. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORISED PARTIES	27
3.8. STABILITY AND CONSISTENCY OF THE REGULATORY CONTROL	27
3.9. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES.....	27
4. MANAGEMENT SYSTEM OF THE REGULATORY BODY	30
4.1. ORGANISATIONAL POLICIES.....	30
4.2. MANAGEMENT SYSTEM ARCHITECTURE.....	30
4.3. RESOURCE MANAGEMENT	31
4.4. KNOWLEDGE MANAGEMENT	31
4.5. MANAGEMENT OF ORGANISATIONAL CHANGE.....	31
4.6. SAFETY CULTURE	31
4.7. COMMUNICATIONS WITH STAFF	32
4.8. CONTROL OF DOCUMENTS	32
4.9. CONTROL OF RECORDS	32
4.10. PLANNING	33
4.11. GRADING THE APPLICATION OF RESOURCES	34
4.12. MEASUREMENT, ASSESSMENT & IMPROVEMENT	34
5. AUTHORISATION.....	36
5.1. GENERAL	36
5.2. THE LICENSING/AUTHORISATION PROCESS	36
5.3. REGULATORY DECISIONS.....	37

5.4.	REQUIREMENTS FOR PERIODIC SAFETY REVIEW	38
	POLICY ISSUE – PUBLIC PARTICIPATION IN THE LICENSING PROCESS	39
6.	REVIEW AND ASSESSMENT	40
6.1.	GENERAL	40
6.2.	ORGANISATIONAL ASPECTS OF THE REVIEW AND ASSESSMENT PROCESS	40
6.3.	CAPABILITY FOR INDEPENDENT REGULATORY AUDIT CALCULATIONS	41
6.4.	UPDATING OF REGULATIONS RELATED TO REVIEW AND ASSESSMENT	42
6.5.	ACCEPTANCE CRITERIA	42
6.6.	PERIODIC SAFETY REVIEW – AGEING MANAGEMENT.....	44
6.7.	OPERATIONAL EVENT INVESTIGATION, EXPERIENCE FEEDBACK	44
7.	INSPECTION	45
7.1.	GENERAL	45
7.2.	NUCLEAR POWER PLANTS	47
7.3.	WASTE FACILITIES	48
8.	ENFORCEMENT	49
8.1.	GENERAL	49
9.	REGULATIONS AND GUIDES	50
9.1.	EXISTING REGULATIONS AND GUIDES	50
9.2.	PROCESS FOR DEVELOPMENT OF REGULATIONS AND GUIDES.....	52
9.3.	PROMOTION OF REVIEW OF THE REGULATIONS AND GUIDES TO INTERESTED PARTIES.....	53
10.	EMERGENCY PREPAREDNESS AND RESPONSE	54
10.1.	GENERAL REQUIREMENTS	54
10.2.	FUNCTIONAL REQUIREMENTS	56
10.3.	INFRASTRUCTURAL ELEMENTS.....	59
11.	OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR FACILITIES, RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL	63
11.1.	OCCUPATIONAL RADIATION PROTECTION.....	63
11.2.	RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL.....	67
12.	REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT	74
12.1.	ACTIONS TAKEN BY THE REGULATORY BODY IN THE AFTERMATH OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT	74
12.2.	PLANS FOR UP-COMING ACTIONS TO FURTHER ADDRESS THE REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT.....	77
12.3.	SIGNIFICANCE OF REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA ACCIDENT ACROSS REVIEWED AREAS	78
	APPENDIX I – LIST OF PARTICIPANTS	85
	APPENDIX II – MISSION PROGRAMME	86
	APPENDIX III – SITE VISITS	91
	APPENDIX IV – LIST OF COUNTERPARTS	92
	APPENDIX V – RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	95
	APPENDIX VI – CONCLUSIONS ON THE REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT	101
	APPENDIX VII – UJD SR REFERENCE MATERIAL USED FOR THE REVIEW	104
	APPENDIX VIII – IAEA REFERENCE MATERIAL USED FOR THE REVIEW	106
	APPENDIX IX – ORGANISATIONAL CHART	109

EXECUTIVE SUMMARY

At the request of the Government of Slovakia, an international team of senior safety experts met representatives of the Nuclear Regulatory Authority of the Slovak Republic (UJD SR) from 28 May to 7 June 2012 to conduct an Integrated Regulatory Review Service (IRRS) mission. The mission took place mainly at the headquarters of UJD SR in Bratislava. The international expert team also met the Public Health Authority of the Slovak Republic (UVZ SR), competent organization in the radiation safety regulatory aspects, in relation to the regulation of occupational radiation protection in nuclear facilities, emergency preparedness and response and environmental monitoring. However, the mission did not include a comprehensive review of the national regulatory infrastructure for radiation safety of Slovakia, which is planned to be covered in the IRRS follow-up mission.

The purpose of this IRRS mission was to review the effectiveness of the Slovak regulatory framework for nuclear safety within the competence of UJD SR. Special attention was given to the review of the regulatory implications of the TEPCO Fukushima Dai-ichi accident within the Slovak framework for safety. The review compared the Slovak regulatory framework for nuclear safety against IAEA safety standards as the international benchmark for safety. The mission was also used as an opportunity to exchange information and experience between the IRRS review team members and the UJD SR and UVZ SR counterparts in the areas covered by the IRRS.

The IRRS Review team consisted of 12 senior regulatory experts from 12 IAEA Member States, 4 IAEA staff members, 1 IAEA administrative assistants and 2 observers. The IRRS Review team carried out the review in the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the nuclear safety regulatory body; the management system of the nuclear safety regulatory body; the activities of the nuclear safety regulatory body including the authorization, review and assessment, inspection and enforcement processes; development and content of regulations and guides; emergency preparedness and response; occupational radiation protection in nuclear installations; environmental monitoring; and waste management. It was agreed that other regulatory functions covering other facilities and activities as well as the full range of responsibilities and activities of UVZ SR will be reviewed by the IRRS follow-up mission.

The IRRS mission also included the following regulatory policy issues for discussion: public participation in the licensing process and status of a regulatory body in the state administration system.

The IRRS review addressed all facilities regulated by UJD SR including nine nuclear power units, spent fuel and waste management facilities.

The mission included observations of regulatory activities and a series of interviews and discussions with UJD SR staff and UVZ SR staff to help assess the effectiveness of the regulatory system. These activities included observations of inspections at Mochovce site (Nuclear Power Plants) and at Bohunice site (intermediate storage facility for spent fuel and waste management facilities). Throughout the review of the various areas and policy issues, special consideration was given to the regulatory implications of the TEPCO Fukushima Dai-ichi accident. The IRRS team members observed the working practices during inspections carried out by UJD SR and UVZ SR, including discussions with the licensee personnel and management. In addition the IRRS team observed an emergency exercise which was conducted with representatives from UJD SR, UVZ SR and the operator.

UJD SR and UVZ SR provided the IRRS review team with advanced reference material and documentation including the results of self-assessment in all areas within the scope of the mission. However no action plan for improvements after the self-assessment was established. Throughout the mission, the IRRS Review team was extended full cooperation in its review of regulatory, technical and

policy issues by all parties. The staff of UJD SR and UVZ SR was very open in their discussions and provided the fullest practicable assistance.

The IRRS review team identified a number of good practices and made recommendations and suggestions where improvements will enhance the effectiveness of the regulatory framework and functions in line with the IAEA Safety Standards.

UJD SR has been legally assigned to regulate the nuclear safety in Slovakia. Other regulatory authorities have also responsibilities in the regulation of the Slovakian nuclear sector such as UVZ SR, subordinated to the Ministry of Health, for radiation safety. UJD SR operates as an independent regulatory body and conducts its regulatory processes in a well-organized, open and transparent manner. UJD SR is properly resourced and has developed and implemented a systematic training approach to meet its competence needs. On the TEPCO Fukushima Dai-ichi, UJD SR has reacted and communicated promptly in proportion to its importance for nuclear safety.

Among the strengths and good practices identified by the IRRS review team are the followings:

- UJD SR has a high degree of independence;
- UJD SR has a comprehensive, well-formalized and yet flexible and efficiently implemented strategic approach to informing and consulting interested parties;
- UJD SR has developed and implemented a structured approach to training and developing its staff based on the systematic approach to training;
- Detailed legal requirements provide a solid basis for on-site and off-site response in nuclear emergencies coordinated with local authorities; and
- UJD SR has established a comprehensive and exhaustive set of regulations and guidance in the area of waste management and decommissioning that encourages waste minimisation.

The IRRS Review team identified issues warranting attention or in need of improvement and believes that consideration of these would enhance the overall performance of the regulatory system.

- Division of responsibilities among State Authorities in the area of safety and improvement of planning and coordination of their activities;
- The development of a national policy and strategy for nuclear safety.
- Assessment process of the competence of UJD SR consultants and ensure that there is no potential conflict of interest;
- Policy and strategy as regards backend of spent fuel management; and
- A unified national radiation monitoring system to ensure its results could be used by competent authorities in normal situations as well as during emergencies.

The IRRS Review team findings are summarized in Appendices V and VI.

An IAEA press release was issued at the end of the mission.

I. INTRODUCTION

At the request of the Government of the Slovak Republic, an international team of senior safety experts met representatives of the Nuclear Regulatory Authority of the Slovak Republic (UJD SR) from 28th May to 7th June 2012 to conduct an Integrated Regulatory Review Service (IRRS) mission. The international expert team also met the Public Health Authority of the Slovak Republic (UVZ SR subordinated to the Ministry of Health), competent organisation in the radiation safety regulatory aspects, in relation to the regulation of occupational radiation protection in nuclear facilities, emergency preparedness and response and environmental monitoring. However, the mission did not include a comprehensive review of the national regulatory infrastructure for radiation safety of Slovakia.

The purpose of the peer review was to review the Slovak regulatory framework for nuclear and radiation safety for nuclear facilities. The review mission was formally requested by UJD SR on 9 January 2010. A preparatory mission was conducted 19-20 January 2012 at UJD SR Headquarters in Bratislava to discuss the purpose, objectives, scope and detailed preparations of the review in connection with the facilities regulated by UJD SR and selected safety aspects.

The IRRS review team consisted of 12 senior regulatory experts from 12 IAEA Member States, 4 IAEA staff members, 1 IAEA administrative assistant and an IAEA Administrative Observer. A representative from Poland attended the mission to observe the implementation of an IRRS mission. The IRRS review team carried out the review in the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the nuclear safety regulatory body; the management system of the nuclear safety regulatory body; the activities of the nuclear safety regulatory body including the authorisation, review and assessment, inspection and enforcement processes; development and content of regulations and guides; emergency preparedness and response; occupational radiation protection in nuclear facilities; environmental monitoring for public radiation protection; waste management and decommissioning. Special attention was given to the regulatory implications of the TEPCO Fukushima Dai-ichi accident in the Slovak framework for nuclear safety.

In addition, policy issues were discussed, including: public participation in the licensing process of nuclear energy for peaceful use and status of a regulatory body in the state administration system.

UJD SR, in co-operation with UVZ SR, conducted a self-assessment in preparation for the mission. The results of its self-assessment and supporting documentation were provided to the team as advance reference material for the mission. During the mission the IRRS review team performed a systematic review of all topics by reviewing the advance reference material, conducting interviews with management and staff from UJD SR as well as UVZ SR and performed direct observation of UJD SR and UVZ SR working practices during inspections. The IRRS Team has noted that UJD SR has not prepared an action plan for improvements after the self-assessment process was finished, which is not consistent with the IRRS guidelines.

All through the mission the IRRS team received excellent support and cooperation from UJD SR and UVZ SR.

II. OBJECTIVE AND SCOPE

The purpose of this IRRS mission was to conduct a review of the Slovak nuclear safety regulatory framework and activities to review its effectiveness and to exchange information and experience in the areas covered by the IRRS. The IRRS review scope included all facilities regulated by UJD SR including 4 operating nuclear power reactors; 2 power reactors under construction; 3 power reactors under decommissioning; 1 operating radioactive waste treatment facilities and 1 radioactive waste repository. The review was carried out by comparison of existing arrangements against the IAEA safety standards.

It is expected that the IRRS mission will facilitate regulatory improvements in Slovakia and other Member States from the knowledge gained and experiences shared by UJD SR, UVZ SR and IRRS reviewers and through the evaluation of the effectiveness of the Slovak nuclear regulatory framework and its good practices.

The key objectives of this mission were to enhance nuclear safety, and emergency preparedness and response:

- ✓ Providing Slovakia, through completion of the IRRS questionnaire, with an opportunity for self-assessment of its activities against IAEA safety standards;
- ✓ Providing Slovakia, with a review of its regulatory programme and policy issues relating to nuclear safety, and emergency preparedness;
- ✓ Providing Slovakia, with an objective evaluation of its nuclear safety, and emergency preparedness and response regulatory activities with respect to IAEA safety standards;
- ✓ Contributing to the harmonization of regulatory approaches among IAEA Member States;
- ✓ Promoting the sharing of experience and exchange of lessons learned;
- ✓ Providing reviewers from IAEA Member States and the IAEA staff with opportunities to broaden their experience and knowledge of their own fields;
- ✓ Providing key UJD SR and UVZ SR staff with an opportunity to discuss their practices with reviewers who have experience with different practices in the same field;
- ✓ Providing Slovakia with recommendations and suggestions for improvement; and
- ✓ Providing other States with information regarding good practices identified in the course of the review.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

At the request of the Government of Slovakia, a preparatory meeting for the Integrated Regulatory Review Service (IRRS) was conducted from 19th to 20th January 2012. The preparatory meeting involved the appointed Team Leader Mr Andrej Stritar, Deputy Team Leader Ms Olena Mykolaichuk, and the IRRS IAEA Team representatives, Mr Jean-René Jubin, Mr Hilaire Mansoux and Mr Peter Zombori.

The IRRS mission preparatory team conducted extensive discussions regarding regulatory programmes and policy issues with the senior management of UJD SR represented by Ms Marta Žiaková, UJD SR Chairperson, other senior management and staff, as well as senior management of UVZ SR, including Mr Vladimír Jurina, Head of Department of Radiation Protection of UVZ SR. The discussions resulted in agreement that the regulatory functions covering the following facilities and activities were to be reviewed by the IRRS mission:

- Nuclear power plants;
- Waste facilities;
- Decommissioning;
- Occupational radiation protection in nuclear facilities;
- Environmental monitoring for public radiation protection;
- Waste management (policy and strategy, predisposal and disposal);
- Regulatory implications of the TEPCO Fukushima Dai-ichi accident; and
- Selected policy issues.

It was agreed that other regulatory functions covering other facilities and activities, like the use of sources in the medical and industrial areas, transport of radioactive materials, as well as the full range of responsibilities and activities of UVZ SR will be reviewed by the IRRS follow-up mission.

Ms Žiaková and other UJD SR staff made comprehensive presentations on the national context, the current status of UJD SR and the self-assessment results to date. Mr Jurina made a presentation on UVZ SR.

IAEA staff presented the IRRS principles, process and methodology. This was followed by a discussion on the provisional work plan for the implementation of the IRRS in Slovakia in May-June 2012.

The proposed IRRS Review team composition (senior regulators from Member States to be involved in the review) was discussed and the size of the IRRS Review team was tentatively confirmed. Logistics including meeting and work space, counterpart and Liaison Officer Identification, proposed site visits, lodging and transportation arrangements were also addressed.

The UJD SR Liaison Officer for the preparatory meeting and the IRRS mission was Mr Karol Janko.

UJD SR provided IAEA and the review team with the advance reference material for the review at the end of March 2012, including the self-assessment results, through an external webpage dedicated to IRRS preparation. In advance of the mission, the IAEA review team members conducted a review of the advance reference material and provided their initial review comments to the IAEA Coordinator prior to commencement of the IRRS mission.

B) REFERENCE FOR THE REVIEW

The latest, most relevant IAEA safety standards were used as review criteria. A more complete list of IAEA publications used as the reference for this mission is given in Appendix VIII.

C) CONDUCT OF THE REVIEW

An opening IRRS Review team meeting was conducted on Sunday, 27th May, 2012 in Bratislava, led by the IRRS Team Leader and the IRRS IAEA Team Coordinator. This discussed the basis for the review and the background, context and objectives of the IRRS. A general overview was provided, to include focus areas and specific issues to be addressed during the mission, and the approach to review and evaluation was clarified and agreed with all reviewers. The agenda for the mission was presented.

In addition, the IAEA Team Coordinator and Review Area Facilitator presented the expectations regarding application of the new module on the IRRS “Regulatory implications from TEPCO-Fukushima Dai-ichi Accident”.

The Liaison Officer was present at the opening IRRS Review team meeting, in accordance with the IRRS guidelines, and presented the logistical arrangements for the mission.

The reviewers also reported their first impressions of the advance reference material.

The formal IRRS entrance meeting was held on Monday, 28th May 2012, with the participation of UJD SR and UVZ SR senior management and staff. Opening remarks were made by Ms Žiaková, the Chairperson of UJD SR, the IRRS Team Leader and the IRRS Team Coordinator. Ms Žiaková gave an overview of the Slovakian UJD SR approach and Mr Bédi, from UVZ SR, provided an overview on radiation protection in Slovakia.

During the mission, a systematic review was conducted for all the review areas with the objective of providing UJD SR and UVZ SR with recommendations and suggestions for improvement as well as identifying good practices. The review was conducted through meetings, interviews and discussions, visits to facilities and direct observations regarding the national practices and activities.

The IRRS Review team performed its activities based on the mission programme given in Appendix II.

The IRRS exit meeting was held on Thursday 7th June 2012. The opening remarks at the exit meeting were presented by Ms Žiaková and were followed by the presentation of the results of the mission by the IRRS Team Leader Mr Stritar. Closing remarks were made by Mr Jim Lyons, IAEA, Director, Division of Nuclear Installation Safety.

1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

1.1. NATIONAL POLICY AND STRATEGY

The Government of the Slovak Republic has established a framework for assuring nuclear safety through the provisions of acts (e.g. Atomic Act and Act on Protection, Support and Development of Public Health), regulations and governmental resolutions based thereon. These legally binding documents codify the safety objectives and principles of EU Council Directive 2009/71/EURATOM of 25th June 2009 establishing a Community framework for the nuclear safety of nuclear installations (see par.13) and IAEA Safety Fundamentals. The basic policy is the protection of humans and the environment against the hazards of ionizing radiation. The basic strategy is the licensing of facilities and activities and continuous regulatory oversight in order to ensure compliance with the legal provisions. Only peaceful use of nuclear energy is allowed.

The legislative acts stipulate that safety regulations should be applied in accordance with a graded approach based on the type of nuclear installation, inventory of nuclear materials, radioactive waste and spent fuel and the activities that are carried out in these installations.

The IRRS Team noted, however, that the Government of the Slovak Republic has not established a national policy and strategy for nuclear safety as a separate document. The objective of producing such a document is to demonstrate the Government's long-term commitment to safety and provide a national co-ordinated plan to ensure the appropriate national infrastructure including education; training; planning and co-ordination for the development or construction of new nuclear installations; financial provision for existing and proposed facilities; development of regulation and guidance; and research which will need to be put in place to secure its delivery. It is the view of the IRRS team that this process should be developed and implemented to ensure the appropriate focus and commitment to safety is maintained. UJD SR should take a lead in preparing a draft of a National Policy and Strategy for Safety and promote its adoption.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req. 1 states that <i>“The Government shall provide a national policy and strategy for safety, the implementation of which shall be subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities, to achieve the fundamental safety objective and to apply the fundamental safety principles established in the Safety Fundamentals.”</i>
(2)	BASIS: GSR Part 1 Req. 11 Para. 2.34 states that <i>“As an essential element of the national policy and strategy for safety, the necessary professional training for maintaining the competence of a sufficient number of suitable qualified and experienced staff shall be made available”</i>
R1	Recommendation: The Government should adopt a document that sets out the national policy and strategy for safety, which should include provisions for assuring that competence for nuclear safety, is maintained.

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

The main act in the field of nuclear safety is the Atomic act No.541/2004 Coll. as amended (Atomic Act) and 13 UJD SR regulations issued on its basis. This set of legislative acts is occasionally updated to reflect changes in societal needs and expectations. The last comprehensive update of UJD SR regulations was performed in the year 2012.

Duties and responsibilities for the ministries and other state bodies in Slovakia are stipulated in the act No.575/2001 Coll. as amended and in specific acts of relevant state bodies. Nuclear safety in Slovakia is regulated by the Nuclear Safety Regulatory Authority of the Slovak Republic (UJD SR); and radiation protection is regulated by the Public Health Authority of the Slovak Republic (UVZ SR).

The provisions of the Atomic Act cover all aspects important for nuclear safety and radioactive waste management as foreseen by international standards and good practices.

The IRRS Team has observed less than optimal legal arrangements related to sharing of responsibilities among different state authorities. Further discussion and a related recommendation are addressed in paragraph 1.7. “Coordination of different authorities with responsibilities for safety within the regulatory framework”.

1.3. ESTABLISHMENT OF A REGULATORY BODY

UJD SR was established on 1st January 1993 as the nuclear safety regulatory authority of the Slovak Republic, in accordance with the previous act on Activities of Ministries and Other Central Governmental Bodies No. 347/1990 Coll. as amended. UJD SR supervises nuclear safety of nuclear installations including supervision of the treatment of radioactive waste, nuclear spent fuel management and further stages of the fuel cycle, as well as nuclear materials, including their control and accountancy.

UVZ SR (Public Health Authority) is also a regulatory authority. In Occupational Radiation Protection and Public Radiation Protection it writes the legislation, reviews and assesses licensing documentation, issues authorisations, has the power to stop operations, conducts inspections and monitors working conditions. It can also fine the operator, although this power has not been used.

1.4. INDEPENDENCE OF THE REGULATORY BODY

UJD SR is a central governmental body. It reports directly to the Slovak government. It is independent of organisations and bodies dealing with the promotion of nuclear technologies or responsible for facilities or activities. It is also independent from any other Ministries. These principles are promulgated by the Act on Activities of Ministries and Other Central Governmental Bodies as well as by the Atomic Act.

The head of UJD SR is the chairperson, who is appointed by the government for an indefinite time. UJD SR issues decisions based on its own opinion in accordance with the rules set out in legislation, e.g. the Atomic Act and the Administrative Proceedings Act.

Every UJD SR decision contains also guidance on how to appeal against it (in accordance with the Administrative Proceedings Act). It is possible to appeal against the UJD SR decision within a period of 15 days from the date of delivery of the decision. The chairperson of UJD SR decides in the matter of appeal, but if the licensee is not content with this decision, it has recourse to seek scrutiny of the decision by the court.

The Atomic Act stipulates the general and individual conditions the applicant has to fulfil. UJD SR is the authority which issues final decisions based on the approvals, statements and opinions. UJD SR shall decide on the issue of permission or authorisation after having verified that the applicant has met all the conditions provided for by the Atomic Act and the relevant generally binding legal regulations issued on

the basis thereof. The process for granting permissions or authorisations by UJD SR is independent of the proceedings of any other administrative body.

UJD SR has an advisory body – the Council for Nuclear Safety. This body advises the head of UJD SR in matters of nuclear safety and state supervision over nuclear installations as well as its assessment.

Key employees of UJD SR are civil servants who, according to the Act on State Service, have to carry out their duties in compliance with 6 elements: professionalism, political neutrality, impartiality, effectiveness, stability and morality.

UJD SR can ask the operator to provide any necessary information or information they ask for.

The financial resources for UJD SR are provided through the state budget. Licensed parties, i.e. nuclear facility operators, have to pay certain fees to the state budget, which should cover the major part of UJD SR expenses. It is up to the Government and the Parliament to decide every year about the amount of funds available to UJD SR and the allowed number of employees. UJD SR prepares the proposal for the next year’s budget and its personnel needs. The IRRS Team has learned that, despite the current economic crisis and a general trend of reducing the costs of public administration, UJD SR was given sufficient funds and was also allowed to employ the requested number of people.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1, Req. 4 states that <i>“The government shall ensure that the regulatory body is effectively independent in its safety related decision making and that it has functional separation from entities having responsibilities or interests that could unduly influence its decision making.”</i>
GP1	Good Practice: UJD SR is subordinated directly to the Government of the Slovak Republic, which is giving it a high degree of independence.

1.5. PRIME RESPONSIBILITY FOR SAFETY

The Atomic Act explicitly puts on the licensee the prime responsibility for nuclear safety of the nuclear installation. The licensee bears prime responsibility for safety throughout the life-time of the facility and duration of related activities. The Atomic Act explicitly establishes that the responsibility for safety cannot be delegated. The only person that shall be liable is the licence holder even if the damage was caused by the negligence or another kind of failure of any other persons e.g. suppliers or constructors.

The IRRS Team concluded that a clear definition of the legal obligations in the Law ensures that the licensee’s responsibility for safety could not be relinquished or transferred to the regulatory authority or any other party.

1.6. COMPLIANCE AND RESPONSIBILITY FOR SAFETY

The legal and regulatory framework stipulates that the authorised party has the responsibility to verify that products and services meet expectations (e.g. completeness, validity, robustness) and comply with the relevant requirements. UJD SR inspects compliance with regulations either when the relevant documents are submitted in order to get the authorisation or during inspections. The licensee has the option to choose the supplier. The authorised party must have a quality management system approved by UJD SR.

UJD SR issues authorisations for all the stages throughout the life cycle of a nuclear facility. It can also make any of its decisions subject to the fulfilment of conditions relating to nuclear safety, physical protection, quality assurance or emergency preparedness. UJD SR may modify such conditions when it

considers this to be necessary – for example, if there are changes affecting the basis upon which the decision was made which might affect nuclear safety, physical protection or emergency preparedness; based on new knowledge of science and technology; or in response to a justified written request by the permission or authorisation holder.

The Atomic Act stipulates that responsibility for the safe management of radioactive waste prior to its receipt at the repository shall rest with the originator of the radioactive waste.

The Atomic Act stipulates that the licence holder should have sufficient financial and human resources to ensure nuclear safety, including proper working conditions and necessary engineering and technical support in all the fields connected to nuclear energy. The licence holder regularly reports on nuclear safety matters to the UJD SR as well as continuously fulfilling and evaluating the demands for nuclear safety in order to increase nuclear safety to the highest reasonably achievable level whilst maintaining a safety culture which ensures that nuclear safety has priority over all other issues. UJD SR Inspectors are authorised to demand information regarding the fulfilment of these requirements.

The IRRS Team has observed that UJD SR is issuing a relatively large number of formal decisions to the operating nuclear power plant (about 50 per year/per unit and several hundreds per year per unit under construction). This could be viewed as an example of a strong regulatory regime. However, the added value for nuclear safety with such a practice might not be justified considering the level of regulatory resources that are spent. The need for UJD SR to take formal decisions could be reduced only to those which are of paramount nuclear safety importance, with other actions being carried out by the licensee under its own arrangements but subject to a proportionate control by UJD SR through its inspection processes.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req. 26 states that <i>“Review and assessment of a facility or an activity shall be commensurate with the radiation risks associated with the facility or activity, in accordance with a graded approach.”</i>
(2)	BASIS: GSR Part 1 Para. 4.33 states that <i>“Prior to the granting of an authorisation, the applicant shall be required to submit a safety assessment [8], which shall be reviewed and assessed by the regulatory body in accordance with clearly specified procedures. The extent of the regulatory control applied shall be commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach.”</i>
S1	Suggestion: UJD SR should consider revising the regulatory framework in order to reduce the number of formal regulatory authorisations for licensee activities.

1.7. COORDINATION OF DIFFERENT AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

The Slovak Republic legal system requires that all state bodies coordinate their work and cooperate. They have to exchange information and documents and discuss issues that might impact upon their decisions. They make use of motions and experience of public authorities as well as motions of the public. When trying to resolve issues, an interdepartmental group could be created in order to optimise the work of all parties involved. The government always sets deadlines for action, and the state bodies have to refer back to the government in order to prove they have fulfilled their tasks. In regard to UJD SR, the government approves the UJD SR Statute, which includes coordination of tasks with ministries and other central

governmental bodies.

The Atomic Act stipulates in detail those areas where UJD SR has to work together with other state bodies. The IRRS team has observed that interaction with the Public Health Authority (UVZ SR) is the most intensive one foreseen by legislation, however there are obligations to coordinate also with other Ministries including the Ministry of Environment, Ministry of Labour, Welfare and Family, Ministry of Interior etc.

The IRRS Team has observed that UVZ SR is in general responsible for the regulation of radiation protection. As such issues are tightly interconnected with the operation of nuclear facilities, the coordination of UJD and UVZ is essential. The IRRS Team has seen the document (Memorandum of Understanding) dated 28. 6. 2005 between UJD and Ministry of Health (MoH) defining their mutual cooperation.

However, although legal provisions and MoU are in place, the IRRS Team has observed several less than optimal practices, among others:

- The operator of the nuclear facility has to get different licences from different authorities (more than 7). Multiple licensing might lead to conflicting licensing conditions. For each licence, the licensee has to submit separate applications (basically requesting approval of the same activity) to UJD SR as well as to UVZ SR and to other authorities like the Ministry of Environment.
- UJD SR plans and performs inspections of facilities, and UVZ SR has its own separate plans and inspections. UJD SR is sending its inspection plan for information to UVZ SR, but the Team has observed that no real coordination of inspections takes place.
- In the event of violations each authority can stop operation of the facility.
- With regard to coordination of the dismantling operations of NPP A1 it seems that JAVYS has taken upon itself to coordinate the authorities by calling both UJD SR and UVZ SR to information meetings on a regular basis (follow up of previous activities and planning for future activities).
- In the event of a nuclear accident the Atomic Act stipulates that UJD SR should propose measures how to proceed, while the Public Health Act requires from UVZ SR proposals of protective measures. The effective coordination of these activities during emergencies has not been observed by the Team. UJD SR has a well-equipped and functioning emergency centre, while this is not the case for UVZ SR.
- UJD SR as well as UVZ SR has responsibilities to inform the public about the radiological situation in event of nuclear emergencies. It would make sense for the State to address the public from one authoritative source in such a situation.
- In some cases the legislation is not clear which body should take the initiative when responsibilities are shared. This might be the reason that some areas are not properly resolved, for example the definition of Operational Intervention Levels or the Threat Assessment at national level in the framework of emergency preparedness and response.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1 Req. 2 states that <i>“The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated...«”</i>
(2)	BASIS: GSR Part 1 Para. 2.6 states that <i>“The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated.”</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(3)	BASIS: GSR Part 1 Para. 2.23 states that <i>“The government shall assign clear responsibilities for decision making in an emergency and shall make provision for effective liaison between authorised parties and competent authorities and for effective means of communication.”</i>
(4)	BASIS: GS-R-2 Para. 5.4 states that <i>“The emergency arrangements shall include the clear allocation of responsibilities, authorities and arrangements for co-ordination in all phases of the response. These arrangements shall include: ensuring that for each response organisation a single position has the authority and responsibility to direct its response actions; clearly assigning the responsibility for the co-ordination of the entire response and for the resolution of conflicts between response organisations; assigning to an on-site position the authority and responsibility for notifying the appropriate organisation(s) of an emergency and taking immediate on-site actions; and assigning to an on-site position the responsibility for directing the entire on-site response (see paragraphs 4.7–4.10).”</i>
R2	Recommendation: The Government should review and if necessary revise the legal framework and clarify the division of responsibilities among State Authorities in the area of nuclear and radiation safety, including emergency preparedness and response, in order to avoid overlaps or gaps in discharging regulatory functions and unduly burdening the licensees.
(1)	BASIS: GSR Part 1 Req. 7 states that <i>“Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for the effective coordination of their regulatory functions, to avoid any omissions or undue duplication and to avoid conflicting requirements being placed on authorised parties.”</i>
R3	Recommendation: UJD SR should, together with the Ministry of Health, including UVZ SR, analyse potential areas for improvement in their cooperation, including planning and coordination of their activities, communication of information about their decisions and rational use of their resources. They should accordingly update their mutual arrangements and propose changes in the legislative framework to the Government.

1.8. COMPETENCE FOR SAFETY

UJD SR and other state administration bodies provide requirements for building and maintaining the necessary competences and training facilities through the legislation. For example, the UJD SR Regulation on Professional Competence stipulates details about professional competence for employees of the licence holders in the area of nuclear safety.

Training on the representative full-scope simulator ensures effective training of selected employees of nuclear facilities for normal operation, abnormal operation and emergency conditions. Systematic technical cooperation is carried out in cooperation with the IAEA and EU, based on bilateral agreements, as well as multilateral agreements.

VUJE, Plc. is a research and the development centre, where present and future employees of nuclear facilities with direct influence on nuclear safety are trained. It is a privately owned company. It also helps

UJD SR to meet the training and competence needs that are stipulated in the Atomic Act and the Regulation on Professional Competency. Other means for education and training are elaborated by general legal acts, but do not exclusively fall under the scope of UJD SR, e.g. the Act on Universities, the Act on Lifetime Education, the Act on Slovak Academy of Sciences, the Act on Organisation of State Support of Science and Development.

Academic research and development is carried out at the universities, mostly with a technical and scientific focus, by the Slovak Academy of Science or by commercial organisations.

The IRRS Team concluded that UJD SR has put in place programmes to ensure that the operating organisations' key positions for nuclear and radiation safety are staffed by competent personnel.

There are no legislative provisions for building and maintaining the competence of other parties having responsibilities relating to the safety of facilities and activities.

The IRRS Team noted that there are no systematic measures taken by the Government to address the need for enhancing research and development capabilities in support of the nuclear sector. The issue is being covered by a requirement in part 1.1 of this Report.

The issues concerning arrangements for the regulatory body and its support organisations to build and maintain expertise are covered in parts 3.3 and 3.4 of this Report.

1.9. PROVISION OF TECHNICAL SERVICES

In accordance with the Act on Protection, Promotion and Development of Public Health and relevant regulations the Public Health Authority (UVZ SR) is the body responsible for the nationwide radiation monitoring network. The monitoring networks of the Ministry of Interior, Ministry of Transport, Construction and Regional Development, Ministry of Defence, Ministry of Environment, Ministry of Education, Science, Research and Sport, Ministry of Agriculture and Rural Development, and Ministry of Economy are part of the radiation monitoring networks. The Public Health Authority carries out monitoring of radiation and the collection of data within the territory of the Slovak Republic. Requirements for monitoring during normal radiation situations as well as during radiation accidents are defined in the relevant UVZ SR regulations.

The Public Health Authority is also responsible for control over personal dosimetry services and manages the central register of doses. At nuclear sites personal dosimetry is executed by JAVYS at the Bohunice site and related facilities and by Slovenske Elektrarne at Mochovce site.

The calibration of equipment is ensured by the Slovak Metrological Institute. It is carried out in accordance with the Act on Metrology and Regulation on Measures and Measurement Control, wherein lists of equipment to be calibrated as well as other provisions on calibration are specified.

UJD SR does not authorize directly technical services that may have significance for safety. The technical services which may have significance for safety have to be performed within the quality management system of the supplier, and so UJD SR can exercise regulatory control over the quality of technical services within its supervision of the operator's quality management system.

The IRRS Team concluded that technical services related to nuclear and radiological safety, such as services for personal dosimetry, environmental monitoring and the calibration of equipment are available and, even if not authorised by UJD SR, adequately supervised. Some areas for improvement are identified further in Chapters 10 and 11 of this report.

POLICY ISSUE – STATUS OF A REGULATORY BODY IN THE STATE ADMINISTRATION

The policy issue discussion was introduced by a short presentation from the deputy Chairperson. As described above, UJD SR is a central state administrative authority, which is quite a common arrangement in the region. As part of its strategic thinking about potential ways to improve, UJD SR is considering alternative models and is seeking advice and experience from other countries.

The current status of UJD SR confers a number of advantages. UJD SR is highly positioned in the State organisation and has direct access the Government and to all Ministries and to the parliament. It has the power to issue legally binding regulations, and its regulatory independence is well established, as has been noted in this report.

However, as a Government body, UJD SR must follow all its administrative rules and procedures, in particular for the management of staff. The national legal framework for the employment of public civil servants does present constraints in terms of salaries, recruitment and management of competences. UJD SR is also required to be consulted, and to respond, on all governmental legal or decisional initiatives, which creates some unnecessary burden.

During the discussion, some examples of practical measures taken to retain staff were shared by participants, including legally linking inspector salaries to those of their direct counterparts in the nuclear installations; or the amendment of the civil servant regime to enable special bonuses to be paid to nuclear safety regulatory body staff.

The on-going transformation of the status of the British nuclear regulatory body was briefly explained. A government bill has been proposed to establish the regulatory body as a statutory corporation in order to strengthen, focus and improve the organisational framework of nuclear regulation in the UK. When fully operational as a statutory corporation, the Office of Nuclear Regulation will be an autonomous organisation, legally separated from, but still supported by, the Health and Safety Executive. This change should ensure greater accountability, transparency and efficiency of regulatory processes, and provide the regulatory body with the freedom to set its own budgets, produce long-term strategy and annual business plans. It should therefore be better able to respond to changing demands, including the UK nuclear new build programme.

The discussion explored possible alternative options for UJD SR. The only possible option foreseen at this time would be to become a public agency, independent from the government. Such a status would allow more freedom and flexibility in the organisation, management and funding of the regulatory body but would also impact some of the current strengths of UJD SR. Other countries in the region are also contemplating such an evolution, but political commitment and support would be required for any such proposals to be taken forward and implemented successfully.

CONCLUSION

The IRRS Team concluded that elements to ensure the comprehensive legal and regulatory framework for nuclear safety are in place, including the effectively independent regulatory authority – UJD SR. Formalization of the national policy and strategy for nuclear safety would promote further advancements. The improvement of coordination between different authorities warrants special attention.

2. GLOBAL NUCLEAR SAFETY REGIME

2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR COOPERATION

The Slovak Republic participates in all relevant international arrangements for enhancement of nuclear safety globally. This includes the following multilateral agreements: Treaty on Non-Proliferation on Nuclear Weapons, Convention on Physical Protection of Nuclear Material, Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Convention on Nuclear Safety, Convention on Early Notification of a Nuclear Accident and Convention of Assistance in the Case of a Nuclear Accident or Radiological Emergency, Convention on environmental impact assessment in a Trans-boundary Context (Espoo), Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus), and Comprehensive Nuclear Test-Ban Treaty. Slovakian representatives participate in meetings under the relevant conventions.

The Slovak government invited a number of international peer reviews of the safety of facilities and activities, organised by IAEA, WANO and WENRA.

UJD SR extensively uses IAEA safety standards. UJD SR has also incorporated WENRA Reference Levels into its regulatory guides.

There are formal agreements in place for multilateral and bilateral cooperation that enhances safety, particularly through harmonized approaches and increased quality and effectiveness of safety reviews and inspections. These include: Czech Republic, Hungary, Ukraine, Austria, Poland, Slovenia, Russian Federation, USA, and France. In addition, UJD SR takes part in the WENRA network, ENSREG, Forum of the State Nuclear Safety Authorities of the Countries operating WWER type reactors, Severe Accident Research Network (SARNET), etc.

The IRRS Team concluded that the Slovakian Government and UJD SR effectively fulfil their international obligations, participate in the relevant international arrangements, including international peer reviews, and promote international cooperation to enhance safety globally.

2.2. SHARING OF OPERATING AND REGULATORY EXPERIENCE

There are legal requirements in place in Slovakia requiring the nuclear licence holder to establish and implement an operating experience feedback programme. There are also requirements in place to draw lessons and improve after operating experience feedback analysis.

The IRRS Team has noted that UJD SR is inspecting these activities at nuclear facilities. UJD SR is participating in a number of international activities where operating activity data are being collected and disseminated. They also contribute information about events in Slovakia to the IRS database. Any relevant information is reviewed by the specialists, who present findings at regular meetings of the special board. At regular intervals foreign operating experience is discussed with wider number of UJD SR inspectors.

Information obtained through international channels is sometimes used to require corrective actions to be carried out to prevent recurrence of safety significant events. The IRRS Team considered the more formalised system for regular collection, analysis and dissemination of information about operating experiences abroad to be adequate.

CONCLUSION

The IRRS Team concluded that both the Government of the Slovak Republic and UJD SR are active contributors to the global nuclear safety regime. The value of international exchange of information and experience is also well recognized.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

3.1. ORGANISATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

The organisational structure is prepared and approved by UJD SR management and may be modified whenever it is necessary. Based on article 7, par.6 of UJD SR Statute the organisational structure and any modifications are approved by the Chairperson of UJD SR. Significant changes in the organisational structure are communicated with the Government. The Organisational Order and organisational structure should follow national legislation and established functions should fully cover the competencies and responsibilities set out by the state authority. The UJD SR organization structure is illustrated in Appendix IX.

The functions and responsibilities of UJD SR in relation to financial matters are subject to the Act on Financial Control and Internal Audit. Based on it the public authority is obliged to follow principles of economy, efficiency, effectiveness and expediency in the management of public funds. Other important laws are the Act on Procurement and the Act on Financial Rules of Public Administration.

Managing the use of resources is effected through the planned allocation of resources to appropriately selected sub-programmes and programme budgeting through a 3-year period. This is reviewed for each one-year budget period. The case for resources is made by managers with regard to their anticipated work programme. Allocation of funds is approved by the Chairperson based on consultation with managers and with consideration to the priorities of the organisation. Requirements for authority funding are reflected in the proposal for the budget for the coming year. A medium-term projection is prepared of financial resources needed in terms of surveillance activities. Due account is taken of the Slovak Republic's membership of international organisations and additional requirements arising, for example, from international cooperation.

In 2007 the Atomic Act was amended so that a new model of financing UJD SR was enacted. This made provision for an obligatory financial contribution to the state budget from holders of authorisations issued under the Atomic Act. In 2010 the contribution was increased taking into account the on-going construction activities in the nuclear energy field. As a result the UJD SR budget was increased to about 5,2 M Euro, 4,2 M Euro coming from fees of authorised parties and 1,0 M Euro from general state income. Following the Fukushima accident the Government approved additional financing for UJD SR to the sum of 3 M Euro for 3 years starting 2012 to cope with lessons learned, so enabling UJD SR to contract the necessary competence.

3.2. EFFECTIVE INDEPENDENCE DURING CONDUCT OF REGULATORY ACTIVITIES

Employees of UJD SR perform state regulation over nuclear safety using generally accepted principles, including independence and professionalism in the public interest. Civil servants should not carry on activities where their private interests conflict with the public interest, not use official information for private purposes and not accept favours from those seeking government contracts.

For employees working in the public interest that fall under the regime of the Labour Code, legislation sets out what could constitute conflict of interest. Sanction mechanisms to enforce the act are not currently sufficient and it is expected that changes will be required to the Criminal Procedure Code, Labour Code and Administrative Code. UJD SR during its existence has not identified a single case of conflict of interest.

Besides meeting strict requirements of state legislation, UJD SR has developed the Quality Manual which deals also with the ethics of state employees.

UJD SR has the power to intervene at any facilities or activities that present significant radiation risks, irrespective of the possible costs to the authorised party. UJD SR can modify or cancel permissions or authorisations and UJD SR inspectors are authorised to withdraw licences of special professional competency. UJD SR can decide to restrict the scope or the validity of authorisations, order the authorisation holder to take the necessary measures or order it to suspend the operation of the nuclear installation. In case of violation of provision of the Atomic Act UJD SR shall impose a fine up to 2,000,000 EURO based on which provision was violated. In 2011 two fines were imposed on the authorisation holder by UJD SR.

3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

The number of employees of UJD SR is set out by the Ministry of Finance for each calendar year. Requirements for the number of staff of the authority should be given in preparing the state budget for next year, based on the tasks foreseen by UJD SR. The medium-term outlook of human resource needs and priorities is processed in terms of expected activities, Slovakia's membership in the European Union and other requirements. In order to secure adequate human resources under financial crisis conditions UJD SR prepared the Analysis of Competence and submitted it to the Government in January 2011. The Analysis was approved by the Government in March 2011, and then served as a basis for negotiations with the Ministry of Finance to secure an adequate number of staff.

The UJD SR Chairperson approves the staff allocation based on the Board's assessment of the needs of individual organisational units, or in response to decisions of higher state bodies. As at end of May 2012 UJD SR employed 93 employees, of whom 61 were professional staff dedicated to regulatory tasks (special civil servants).

In accordance with the national legislation, recruitment to civil servant positions including all professional positions at UJD SR is to be carried out by general advertisement following a position becoming vacant. The system does not allow for advance search and training of potential candidates unless they are already UJD SR employees.

The IRRS team noted that, although staffing levels are currently adequate, both UJD SR top management and operating organisation representatives expressed concern about potential shortage of staff with specific competences as well as a potential general understaffing of UJD SR in view of the imminent commissioning of two new units at Mochovce site. The absence of any additional capacity at UJD SR for reactive work was also explicitly mentioned. The IRRS team concluded that the staffing problem could deteriorate at any moment taking into account that a significant number of qualified staff are already at, or near, retirement age.

The approach of UJD SR to human resources is outlined in the Quality Manual, Chapter 2.3. UJD SR prepares and evaluates a plan of human resources. An annual plan of training and education is prepared to deliver Inspector competencies based on requirements set out in the management system procedures and includes items for periodic retraining. Progress in meeting the plan is regularly evaluated and it is updated, if needed. The results of evaluations are submitted to the UJD SR Board meeting.

3.4. TRAINING & COMPETENCE ARRANGEMENTS

The recruitment of Inspectors to UJD SR is under its control, following a period where recruits were selected by the central state office. UJD SR recruits people with varying levels of experience, including some who join straight from University, and retention of staff can be challenged by government salary

constraints. This increases the importance of an effective training and development process as some people need to be trained in aspects of nuclear technology as well as regulation. The IRRS team found that UJD SR has now put in place a structured training process which is applied to all individuals who join the organisation as Inspectors. This is based around the systematic approach to training advocated by IAEA. Trainee Inspectors have a competency profile which sets out the knowledge, skills and attitudes that are required for their roles, and these are linked to training modules. The training modules cover all aspects of the Inspectors’ work (legislative, regulatory, technical, management system etc.). UJD SR does not design or conduct all its own training and support to develop the content of each module, and deliver some training, is provided by the VUJE training centre using UJD SR subject matter specialists where appropriate. Each training module includes a performance assessment. At the conclusion of VUJE training, an examination comprising written and oral elements is undertaken. In addition and when the individual’s line manager considers he or she to be ready, a formal UJD SR examination to confirm appointment as an Inspector takes place in accordance with the requirements of the Atomic Act.

The IRRS team commended the progress that UJD SR has made towards developing a SAT-based approach to training of its Inspectors.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-1 Req. 11 states that <i>“The government shall make provision for building and maintaining the competence of all parties having responsibilities in relation to the safety of facilities and activities.”</i>
(2)	BASIS: GS-R-3 Para. 4.3 states that <i>“Senior management shall ensure that individuals are competent to perform their assigned work and that they understand the consequences for safety of their activities. Individuals shall have received appropriate education and training, and shall have acquired suitable skills, knowledge and experience to ensure their competence. Training shall ensure that individuals are aware of the relevance and importance of their activities and of how their activities contribute to safety in the achievement of the organisation’s objectives.”</i>
GP2	Good Practice: UJD SR has developed and implemented a structured approach to training and developing its staff based on the systematic approach to training.

3.5. ADVISORY BODIES

Since UJD SR is not entirely self-sufficient in a specific technical or functional area it seeks advice and/or assistance not only from established technical support organisations specializing themselves in nuclear industry businesses but also from universities or university staff members and also from private companies. IAEA expert mission support is also important for UJD SR.

The statute of UJD SR entitles the Chairperson to establish Advisory bodies to discuss important issues related to its regulatory duties with the aim of advising UJD SR and better enabling it to fulfil essential tasks. UJD SR has established one permanent external body – the UJD SR Council for Nuclear Safety - and several permanent internal bodies including the UJD SR Advisory Board for Management System. In addition, UJD SR creates ad hoc bodies to address specific tasks.

The UJD SR Council for Nuclear Safety (Council) involves, in addition to the UJD SR Chairperson and council secretary, external experts coming from the Academy of Science, universities, research institutions, industries, finance, and partner regulatory bodies. Among members of Council there is no

one person from companies regulated by UJD SR or institutions owned by regulated companies. As a result one may conclude that Council members are not in positions when partiality or personal interest could compromise their independence.

3.6. USE OF TECHNICAL SUPPORT

UJD SR makes use of external technical support organisations. There is no single dedicated TSO, but support may be obtained as necessary from a number of bodies which have the requisite competencies. UJD SR technical staff prepare the contracts and receive the analytical work of the support organisations in order to ensure that UJD SR at all times understands the findings and is able to make an informed regulatory judgement. The process followed to appoint contractors follows two phases: the first phase consists of a technical review of the offer which is validated by the board of directors; the second phase is common to all administrative organisations in Slovakia and includes ensuring that the offer is correctly specified and fulfils the legal requirements for procurement by public bodies. However, at present, the selection process does not confirm systematically and formally that there is no potential conflict of interest on the part of the selected contractor.

Where scarce skills are not available within UJD SR – for example seismic assessment – the contract specification is prepared by a person with sufficient intelligent customer capability to be able to place and maintain oversight of the contract. It is important that a regulatory body maintains an intelligent customer capability, and this can be more challenging for smaller regulatory bodies with less depth across technical disciplines. UJD SR may wish to consider conducting periodic analyses to establish its vulnerabilities and to satisfy itself that its succession management arrangements are adequate to secure the continuing availability of an intelligent customer capability.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 para. 4.22 states that <i>“The obtaining of advice and assistance does not relieve the regulatory body of its assigned responsibilities. The regulatory body shall have an adequate core competence to make informed decisions. In making decisions, the regulatory body shall have the necessary means to assess advice provided by advisory bodies and information submitted by authorized parties and applicants”</i>
(2)	BASIS: GS-R-3 Para. 5.10 states that <i>“The control of processes contracted to external organisations shall be identified within the management system. The organisation shall retain overall responsibility when contracting any processes.”</i>
(3)	BASIS: GSR Part 1 Para. 4.20 states that <i>“Arrangements shall be made to ensure that there is no conflict of interest for those organisations that provide the regulatory body with advice or services.”</i>
R4	Recommendation: UJD SR should develop provisions to assess the competence of its consultants and ensure systematically and formally that there is no potential conflict of interest.
S2	Suggestion: UJD SR should consider ensuring that it retains sufficient intelligent customer capability to specify technical support contract content and to select, manage, understand and receive the work of its contractors.

3.7. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORISED PARTIES

Main principles concerning communication with authorised parties are described in the UJD SR Quality Manual, Chapter 1.5.1 – Communications with Regulated Entities. Openness concerning public, media and supervised subjects is covered by one of the principles of UJD SR's Quality Policy.

Meetings between UJD SR management and top management of major supervised entities are held at least once a year. At each meeting minutes are taken. Where necessary, other meetings between UJD SR management and management of regulated entities are organized. The regulatory body informs applicants and authorised parties about policies, principles, safety objectives and associated criteria in various ways, e.g., via special workshops organized by UJD SR.

Legislative proposals are regularly negotiated with representatives of regulated entities and they are informed about generally binding legal documents, UJD SR directives, guides and other UJD SR recommendations. Most of these documents are available through the UJD SR website.

The process of issuing authorisations is described in UJD SR management system procedures and should follow the general Administrative Proceedings Act. This act describes in detail what form a decision should take. It requires that a decision shall be justified and its basis shall be explained.

Following meetings with representatives of the operating organisation Slovenske Elektrarne involved in both operation of Mochovce 1&2 and construction of Mochovce 3&4, the IRRS team concluded that relations between UJD SR and operators seem to be open and frank; they appear to work together in a professional and open way with mutual respect.

3.8. STABILITY AND CONSISTENCY OF THE REGULATORY CONTROL

UJD SR has established a process-oriented management system. Each process consists of a sequence of activities, which are described in the procedures/manuals. The management system is implemented, reviewed, evaluated and updated, as necessary. Further details and relevant conclusions are included in chapter 4 of this report.

The IRRS team concluded, particularly following meetings with representatives of licensees, that UJD SR does place appropriate emphasis on continuous enhancement of safety with due attention paid to proper justification and substantiation of the regulatory requirements. All proposed changes are being properly communicated and discussed with interested parties, as described in more detail in Part 3.7 of this report.

The IRRS team concluded that UJD SR has in place proper arrangements to ensure stability and consistency of regulatory control.

3.9. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

Based on the Act on Administrative proceedings, the initiation, conduct and completion of UJD SR administrative proceedings on matters which are of public interest, are to be published on the UJD SR website. In addition, all decisions issued by UJD SR are to be made public through the UJD SR website. The UJD SR website is used as the main tool for informing the public about UJD SR requirements, action and reports prepared about the nuclear safety of nuclear installations in the Slovak Republic, emergency preparedness activities, as well as for providing information in case of nuclear emergencies.

In the Slovak Republic the Act on the Free Access to Information (Freedom of Information Act) is in force, which gives any natural and legal person the right to receive information from state administrative bodies, if the requested information is available. There are some exceptions such as trade secrets, personal data, security matters, etc. that enable information owners not to disseminate the requested information.

There is also a special exception regarding dissemination of sensitive information. The sensitive information is specified in the Atomic Act.

Based on the Atomic Act, UJD SR presents to the government of the Slovak Republic and subsequently to the National Council of the Slovak Republic, once a year by 30 April, UJD SR reports on the status of nuclear safety of nuclear installations on the territory of the Slovak Republic and on its activities in the previous year.

UJD SR provides for comments to other governmental bodies and to general public all drafts of legislation and regulations in accordance with established procedures.

The process of informing the public about incidents and other abnormalities on nuclear installations is set out in the Directive on Informing the Public about Operational Events at Nuclear Installations and Events in the Transport of Radioactive Materials. This directive governs the internal organisational and technical procedures of UJD SR in informing the public about operational events at nuclear installations, events during the transport of radioactive materials in the Slovak Republic assessed as INES 2 and below, incidents and accidents outside the Slovak Republic, reports on serious deficiencies identified at nuclear installations and the measures taken for their removal, and other matters relating to nuclear safety of nuclear installations in Slovakia.

Information on events at nuclear facilities assessed as INES 1 and lower UJD SR gives to the public on request.

As the experience of communication during and after the TEPCO Fukushima Dai-ichi accident demonstrated that the public expects to be informed about all events, even without release of radioactive materials out of nuclear installations, UJD SR adapted its policy to meet public needs. The communication was very intensive and the public surveys show that the public accepted it well.

Main information is published on the UJD SR website. There is also an e-mail address, which enables the public to send questions which are answered immediately (info@ujd.gov.sk) and a special channel (“Write to us...”) with the same goal. UJD SR organizes press conferences, prepares and disseminates annual reports, leaflets, articles, etc.

There are Civic Information Committees established in the vicinity around Bohunice and Mochovce NPPs with the aim of improving public awareness on nuclear issues in the areas with nuclear facilities. Representatives of UJD SR participate in meetings of the above-mentioned committees to inform members of committees and through them other citizens about nuclear safety of nuclear installations and activities of UJD SR focused on legislative activities, evaluation and inspection activities and international activities in nuclear field. Also, UJD SR communicates with members of local parliament through presentations on parliaments meetings; special seminars, visit of members of parliaments and local mayors in UJD SR, etc.

The communication policy of UJD SR is laid down in a Communication Strategy and a two year Plan of communication activities.

Obligations on authorisation holder to inform the public are laid down in the Atomic Act, Regulation on Notification of Operational Events and Events during Shipment as well as Details of Investigation of Their Reasons, and Regulation on Emergency Planning in Case of Nuclear Incident or Accident.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

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| (1) | BASIS: GSR Part 1 Req. 36 states that <i>“The regulatory body shall promote the establishment of appropriate means of informing and consulting interested parties and the</i> |
|-----|--|

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

public about the possible radiation risks associated with facilities and activities, and about the processes and decisions of the regulatory body.”

GP3

Good Practice: UJD SR demonstrates a comprehensive, well-formalized and yet flexible and efficiently implemented strategic approach to informing and consulting interested parties, including the public, about nuclear safety related issues, activities and events.

CONCLUSION

The IRRS Team concluded that UJD SR is a mature nuclear safety regulatory authority, demonstrating good arrangements for staff training and informing and consulting interested parties. Main challenges to be dealt with are related to strengthening internal competences and streamlining the use of technical support to meet the demands of the developing nuclear sector and implementing lessons learnt from the TEPCO Fukushima Dai-ichi accident.

4. MANAGEMENT SYSTEM OF THE REGULATORY BODY

4.1. ORGANISATIONAL POLICIES

The Atomic Act 350/2011 states that “when using nuclear energy, the emphasis shall preferably be put on safety aspects to all other aspects of such activities”. The importance of safety in UJD SR regulatory decisions and actions is reflected in the Quality Manual and Quality Policy. The Vision for UJD SR is to keep “high levels of nuclear safety in Slovakia, so that the impact of nuclear installations on personnel, population and environment would be as low as reasonably achievable”. A statement that safety is paramount, and overrides all other demands, is included in – but towards the bottom of - the UJD SR Quality Policy. However, the IRRS team did not find this policy promoted widely in the Bratislava and Trnava offices. Moreover, there is no prominent overarching safety policy which serves as the high level starting point from which the management system is derived, and which communicates to staff, the public and other stakeholders the message that securing the protection of people and society from the hazards of the nuclear industry is UJD SR’s overriding priority.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1, Req. 19 states that <i>“The regulatory body shall establish, implement, and assess and improve a management system that is aligned with its safety goals and contributes to their achievement.”</i>
(2)	BASIS: GS-R-3 Para. 2.8 states that <i>“The documentation of the management system shall include the following: The policy statements of the organisation.”</i>
S3	Suggestion: UJD SR should consider establishing, and making prominent, a high level safety policy which places emphasis on safety as an overriding priority.

4.2. MANAGEMENT SYSTEM ARCHITECTURE

The UJD SR quality manual serves as the overarching document that summarises and draws together the components of the UJD SR management system (MS). It includes a statement of responsibilities for maintaining the MS and describes the structure of the system. UJD SR has utilized well-established standards to inform the design of its management system, including ISO 9001:2009, CAF and GS-R-3, but has not yet applied for ISO 9001 certification. UJD SR management may wish to consider seeking accreditation in order to demonstrate its commitment to lead by example – demonstrating to staff, industry and other stakeholders that UJD SR itself is open to review and certification.

The UJD SR management system is process-based. UJD SR functions and responsibilities are established in Part two of the Atomic Act. These functions, responsibilities and main activities are, in turn, implemented through the main processes of the UJD SR management system which include processes relating to legislation, regulatory decision/enforcement, assessment, inspection and other principal activities such as emergency planning. In addition, there are management processes that relate to the management of people and documents and internal review and self-assessment work. There are also supporting processes that underpin the main and management processes. The MS processes are available via the UJD SR intranet. The IRRS team found that the MS structure appears simple and easy to understand.

4.3. RESOURCE MANAGEMENT

UJD SR staff resources are established by the Slovak Republic Ministry of Finance. Each year, UJD SR resource needs (staff numbers and competencies) are identified by Division Heads and agreed by the UJD SR Board. A three year forward look resource plan is also prepared. The annual resource plan is based on the planned work for the coming year. A case supporting the resource bid, and the associated budget, is then made to the Ministry. For the current year, despite tight government controls on civil service staffing and expenditure, the resource needs identified by UJD SR have been met in full. The IRRS team considered that UJD SR has a robust process for identifying its needs and that there are no evident current resource issues. However, as the construction of the Mochovce NPP progresses, resource demands may rise and it is important that UJD SR anticipates and seeks to make provision to meet these increased demands. The IRRS team noted that UJD SR has identified a need to recruit additional staff to support these activities. Training and competence aspects of UJD SR's resource management, and its use of technical support bodies, are considered in Section 3 of this report.

4.4. KNOWLEDGE MANAGEMENT

Changing demographics and the rapid pace of advancement in technology make the effective management of knowledge critical to all organisations. Moreover, as UJD SR salary constraints can challenge its capability to retain experienced staff, the need for effective capture and transfer of knowledge and experience is heightened. UJD SR currently employs an unstructured approach to capture, share and retain technical knowledge. Approaches include making provision for an individual to work alongside an experienced person who may be approaching retirement. However, UJD SR has recognized that a more formal approach to knowledge management is needed to capture, especially, the tacit knowledge of experienced Inspectors, and has committed to participate in IAEA activities to help inform its development of a suitable approach.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-3 Para. 4.2 states that “... the information and knowledge of the organisation shall be managed as a resource.”
S4	Suggestion: UJD SR should continue developing, and then implement a structured knowledge management process.

4.5. MANAGEMENT OF ORGANISATIONAL CHANGE

Organisational change, if poorly considered or implemented, has the potential to impact upon the efficient and effective functioning of an organisation. For these reasons, a formal process which subjects proposals to change organisational resources, capabilities or structures to proportionate risk assessment and oversight is often advisable. However, the IRRS team found that UJD SR's organisational structure has not changed materially since the mid-1990s. Any proposals to change the organisational structure or staffing levels also need to be approved by government. For these reasons there is no formal process for managing organisational change within UJD SR. UJD SR does, however, place expectations on licensees with regard to their justification of proposals for organisational change.

4.6. SAFETY CULTURE

UJD SR has recognised the contribution that leadership, management for safety and safety culture makes to nuclear safety. Since 2005, it has started to include safety culture awareness and training in its

activities. A Chair's Order states the expectation that Inspectors should seek to gather information about safety culture as part of their interactions with the licensees. Since 2011, UJD SR has further developed its thinking to put in place a more structured approach. Safety culture training, drawing on support from IAEA and the Czech Republic, has been developed and rolled out to, initially, 12 Inspectors. A provision for safety culture inspections has been included within the Inspection Plans for 2012, and experience gained will be reviewed to establish the effectiveness of the approach and further refine it. The IRRS welcomed UJD SR's developing approach in this area,

4.7. COMMUNICATIONS WITH STAFF

UJD SR convenes, usually, two meetings per year with all staff. These are an opportunity to brief staff on major issues and gain feedback from them. The UJD SR Chairperson also splits her time between the Bratislava and Trnava offices, which should help to reduce the potential for different philosophies to develop. Alternative communication routes include Divisional and Unit meetings plus email circulation. Staff surveys are also completed periodically. The most recent survey, in 2010, showed a generally improving trend across a range of measures. It is notable that communications between staff and management, and staff satisfaction with management, were both rated much more positively than in previous years.

4.8. CONTROL OF DOCUMENTS

Master versions of documents within the UJD SR management system are held on the intranet. Each document is assigned a process owner. Process owners are required to conduct a review of their documents on an annual basis and changes are notified to staff via e-mail. Where changes to documents are identified as minor, they are implemented directly under the authority of the process owner. If not minor, the proposed change is taken to the Board for consideration and approval. It appears that there is no intermediate approval step, and UJD SR may wish to consider whether it is necessary for all changes above minor to be considered at Board level.

4.9. CONTROL OF RECORDS

The Atomic Act mandates that formal records are kept in paper format. These include, for example, a complete record of nuclear plant construction documents which are kept for the life of the installation plus 10 years. The documents are held in an archive within UJD SR's Bratislava office that meets the standards defined by the Ministry of Internal Affairs. Documents are archived during the second calendar year after they are produced - i.e., 2010 documents are archived during 2012. UJD SR has a records retention strategy that identifies those records which are to be held within its own archive for a period of 10 years, and those which are subsequently to be sentenced to the state Archive and retained indefinitely. The IRRS team found that important regulatory decisions and assessments are retained in the state archive, but some such as lesser assessment reports and inspection reports are retained only for 10 years. The IRRS team suggested that UJD SR should review its strategy for record retention to ensure that all documents that may be relevant for extended periods are retained accordingly.

UJD assessment reports are currently prepared electronically, but then printed out to create the formal record of the assessment. The paper copy is archived in due course. The IRRS team considered that UJD SR could usefully also hold these reports on a central database in order to provide a more accessible source of reference and better support the corporate memory of the organisation. Using an electronic database, such as the Lotus Notes system that is currently in place and would appear able to accommodate this, would appear especially helpful given the physical separation of the Bratislava and Trnava office locations.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1 Req. 35 states that <i>“The regulatory body shall make provision for establishing, maintaining and retrieving adequate records relating to the safety of facilities and activities.”</i>
(2)	BASIS: GS-R-3 Para. 5.21 states that <i>“Records shall be specified in the process documentation and shall be controlled. All records shall be readable, complete, identifiable and retrievable”.</i>
(3)	BASIS: GS-R-3 Para. 5.22 states that <i>“Retention times of records and associated test materials and specimens shall be established to be consistent with the statutory requirements and knowledge management obligations of the organisation. The media used for the records shall be such as to ensure that records are readable for the duration of the retention times specified for each record”.</i>
S5	Suggestion: UJD SR should consider reviewing its strategy for record retention to ensure that all documents that may be relevant for extended periods are retained accordingly.
S6	Suggestion: UJD SR should consider making assessment reports available on an electronic database.

4.10. PLANNING

UJD SR’s planning process takes account of the statutory obligations placed upon it by the Atomic Act and other legislation (see Section 1 of this report). The plans take account of government declarations where they include reference to nuclear safety and the high level goals of UJD SR are set out in a Chair’s Order or Resolution. This states the organisational structure of UJD SR, which is approved by government, and also the roles and responsibilities of the Heads of the main organisational Units. Each directorate develops a plan which proposes the activities to be carried out during the coming year. Cross-cutting plans which address areas such as external support, preparation of guidance, research and development are also developed. These initial plans are discussed at a Board meeting before being made more widely available to Directors for comment within a defined period. Following this, they are discussed and approved at Board level, and published.

Senior level oversight of UJD SR’s activities is conducted principally through Board meetings that take place between 2-weekly and monthly. The Board meetings include reports from Directors on progress in delivering their plans and issues arising. Reports are verbal rather than using a set of metrics. UJD SR is a comparatively small regulatory body, and it is felt that a good overview of activities can be maintained in this way rather than developing a set of key performance indicators. However, some major indicators are monitored on an annual basis, including budgetary information. UJD SR’s Board also conducts a 6 monthly review of its progress in meeting the requirements set out in the government declaration and the Chair’s Order. UJD SR is considering developing an annual Business Plan which better shows the relationship between its responsibilities, strategic priorities, planned activities and their desired outcomes. The IRRS team welcomed this.

4.11. GRADING THE APPLICATION OF RESOURCES

UJD SR adopts a graded approach to prioritising and targeting its inspection and assessment activities, with more staff resource being assigned to installations with higher risk. UJD SR has recently developed a document to help Inspectors identify where their effort may be focused. This uses the level 1 PSA to identify the main safety-significant plant components and activities. It also includes the outcome of a sensitivity analysis to identify the most significant human actions. This information is useful, but UJD SR has recognised that it is just one input to help the Inspectors prioritise their activities. Other factors, such as Inspector experience, and the need to address wider factors such as maintenance, control and supervision, etc. are also taken into account to help prioritise the Inspectors' work.

4.12. MEASUREMENT, ASSESSMENT & IMPROVEMENT

UJD SR conducts self-assessment of individual processes – see “document control” earlier in this section. A major revision to the MS took place in 2007 following an external review, and more extensive MS reviews are usually planned to take place every 3 years. However, the review scheduled for 2010 was postponed in view of resource pressures linked with the scheduling of the IRRS mission (postponed from 2010 to 2012) and was again deferred in response to Fukushima follow-up commitments in 2011.

GS-R-3 puts a special emphasis on regular holistic management system reviews in order to ensure the continuing suitability and effectiveness of the management system. The focus of the review is to confirm that the management system is efficient and effective and that the desired outcomes are achieved by the processes of the organisation. The argument for a regular review has been reinforced by the TEPCO Fukushima Dai-ichi accident. The IRRS team found that UJD SR has not carried out an MS review system following this event, and it has not, therefore, been able to satisfy itself that its management system is adequate, or establish whether there are opportunities for improvement. The IRRS team considered that UJD SR should conduct a proportionate review of its management system.

UJD SR also conducts internal audits to verify compliance with its MS. There are currently three qualified auditors. Recent internal audits have addressed activities such as whether the process for implementing amendments to the Atomic Act is being implemented appropriately; and the process for identifying and meeting staff training needs. These are rather narrow in scope and the UJD SR audit function appears limited and compromised by staff availability - only 2 audits are planned for 2012 as a result of competing priorities. The IRRS team suggested that UJD SR should consider whether the internal audit function is adequate or whether it can be augmented in terms of scope and/or resource.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GS-R-3 Para. 6.1 states that <i>“The effectiveness of the management system shall be monitored and measured to confirm the ability of the processes to achieve the intended results and to identify opportunities for improvement”</i> .
S7	Suggestion: UJD SR should consider conducting a regular review of its management system, and reflect at the earliest opportunity on potential lessons learned from the TEPCO Fukushima Dai-ichi accident.

CONCLUSION

The UJD SR management system includes the principal elements expected of a modern standards management system for a nuclear safety regulatory body as set out in GS-R-3. No major weaknesses were

identified by the IRRS team, but a number of suggestions have been made to help UJD SR further improve and refine the management system.

5. AUTHORISATION

5.1. GENERAL

The IRRS review focused on those aspects of authorisation that are part of UJD SR's responsibilities except for the transport of radioactive materials. Atomic Act No 541/2004 requires that nuclear energy may only be used if permissions or authorisations are issued by the Authority to a natural or legal person. Further legal requirements relating to the licensing process for nuclear plants are set out in the Act, and these are underpinned by a series of regulations. The competence, or legal responsibilities, of UJD SR are set out in the Atomic Act which states that the Authority shall issue permission or authorisation, check whether the conditions for permission or authorisation are met, and have the power to cancel permission or authorisation.

5.2. THE LICENSING/AUTHORISATION PROCESS

Organisations proposing to construct and operate a nuclear power station in the Slovak Republic must first gain permission for the location of the proposed facility. Approval of the site is not the primary responsibility of UJD SR, and is principally a policy and local planning matter, but UJD SR will contribute to the decision – for example, to comment on the suitability of the site to accommodate the proposed activities.

Subsequently, UJD SR regulatory authorisations are required before and as the nuclear installation progresses through the stages of construction, commissioning, operation and decommissioning. As part of its early assessments, UJD SR seeks assurance that, for example, the operator is a properly constituted legal entity, that it has security of tenure on the proposed land, etc.

UJD SR requires technical and other documents to be submitted to enable it to conduct review and assessment to support the licensing process and determine whether the activities associated with the nuclear installation comply with relevant objectives, principles and associated criteria for safety or conditions in the authorisations. The documents are specified in the Atomic Act, and UJD SR regulations.

A preliminary safety analysis report (PSAR) is required to be submitted to support a regulatory decision to authorize the start of construction. UJD SR Regulation 58/2006 sets out the areas that should be addressed within the PSAR, including safety analysis based on the reference design, the justification of any modifications to the design and an initial quantitative risk assessment (PSA). Independent verification of the safety assessment is required in the applicant's submissions. The view of other government offices, including the Ministry of Environment, are taken into consideration in this process, and an environmental impact assessment is required at this stage. The IRRS team considered that the technical areas addressed as part of the case for construction of a proposed NPP are appropriate.

A pre-operational safety analysis report (POSAR) is subsequently required to support regulatory decisions to proceed through the stages of commissioning and operations. UJD SR Regulation 58/2006 sets out the areas that should be addressed within the POSAR. The IRRS team considered that these constitute a comprehensive set of technical requirements.

Applications for permissions and authorisations are also required to include a document showing that the applicant has permanent staff with the required professional competency. However, the IRRS team noted that there is no explicit reference in the requirements for the PSAR or POSAR to include a description of the organisational structures, governance, resources and competencies of the operator. The IRRS team discussed the approach to regulatory oversight of the development of the Operator's organisational capability, and were assured that UJD SR monitors and satisfies itself as to the continuing adequacy of

resources, structures and capabilities.

5.3. REGULATORY DECISIONS

Applications for authorisation of each licensing stage of the NPP are assessed, reviewed or inspected by UJD SR to inform a regulatory decision on whether progress through to the next stage of construction, commissioning or operation should be authorised. The start of construction is a significant step, and UJD SR grants a construction licence, taking into account the views of other ministries and offices such as UVZ SR and the Ministry for Environment, in reaching its decision. Licensing decisions of UJD SR are issued in the form of written decisions. According to the Atomic Act, the authorised party has a right to appeal all written decisions of the regulatory body. The first avenue of appeal is the Chairperson of UJD SR. His/her decision can be further challenged in the courts. Details about the authorisations issued by UJD SR are published on the UJD SR website.

UJD SR authorises the Operator to proceed through stages of commissioning and into operations in accordance with the Atomic Act. UJD SR may impose conditions and limitations on the Operator's activities – for example, relating to nuclear safety, physical protection, quality assurance or emergency preparedness, and modify these where it considers this to be necessary. Throughout the construction, commissioning and operation of a nuclear facility, UJD SR verifies the Operator's compliance with the conditions of the licence or authorisation, and has the power to repeal licenses or authorisations if, for example, it is concerned with the Operator's compliance. UJD SR reviews and, as appropriate, authorizes plant modifications.

UJD SR is required to authorise certain job positions at an NPP, e.g. operational staff in control room, shift engineer, safety engineer etc. The required professional competencies are attained after successful completion of professional training and passing the final state exam in front of an Examination Committee appointed by UJD SR. The scope and content of the training is subject of authorisation by UJD SR. The licence of special professional competence is valid three years from the date of issue.

If there is a proposal to change the company that operates the nuclear site – i.e., to transfer the activities on the licensed site to a different corporate body, a new licence must first be granted. The IRRS team commended this as it enables scrutiny of the organisational capability of the replacement body before it assumes responsibility for nuclear safety.

Time limits for the issue of licences and authorisations are formally defined. These include limits of 4 months for siting of a nuclear installation, except for a repository; 6 months for commissioning or decommissioning of a nuclear installation; 1 year for a construction licence of a nuclear installation or the siting or closure of a repository ; and otherwise 60 days. The IRRS team considered that setting formal timescales for responding could compromise the quality of the analysis supporting the regulatory decision, and that government should review this requirement.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Para. 4.41 states that <i>“Technical and other documents submitted by the applicant shall be reviewed and assessed by the regulatory body to determine whether the facility or activity complies with the relevant objectives, principles and associated criteria for safety.”</i>
(2)	BASIS: GS-G-1.2 Para. 2.6 states that <i>“The regulatory body should indicate to the operator the period of time that is considered necessary for the review and assessment process so as to facilitate the process and to minimize delays in the granting of any</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

necessary authorisations. It is appropriate to reach agreement on an indicative schedule. In scheduling a review and assessment programme, the regulatory body should allow for the fact that the information initially submitted by the operator may be incomplete. In such cases, it will take time to obtain adequate information so that review and assessment in full can be initiated. In addition, important issues may arise, necessitating additional studies and leading to delays. Such factors may lead to large variations in the time necessary for review and assessment in a given stage of the lifetime of the facility. The operator should submit any additional information sought by the regulatory body within the stipulated time. The regulatory body should expend its best efforts to complete its review and assessment process in accordance with the agreed schedule, but this objective should in no way compromise the regulatory body's responsibilities."

S8 **Suggestion: UJD SR should consider recommending to the government a placing of strict limits on the timescales to respond to applications for authorisations is reviewed.**

5.4. REQUIREMENTS FOR PERIODIC SAFETY REVIEW

The operational licence is issued for the period of 10 years. The licensee should start work on preparing a periodic safety review assessment (PSR) eight years after the operational licence has been issued and the results of the PSR are required to be submitted to UJD SR ten years after the previous periodic assessment was completed. The PSR assessment is required to demonstrate, by means of a comprehensive assessment against modern standards, whether the plants, processes, management, operations and facilities covered by a safety case are safe, and that ageing and other time-related phenomena will not render them unsafe before the next PSR. The PSR includes an integrated plan which sets out proposals on corrective measures and other safety improvements arising from the PSR assessments. The IRRS team concluded that the UJD SR approach to periodic safety review is appropriate.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1) **BASIS: GSR Part 1 Req. 26 states that** *“Graded approach to review and assessment of a facility or an activity - Review and assessment of a facility or an activity shall be commensurate with the radiation risks associated with the facility or activity, in accordance with a graded approach.”*

(2) **BASIS: SSG-12 Para. 2.19 states that** *“Licensing principles should be established in the regulatory and legal framework. Examples of licensing principles are the following: ... (h) A graded approach should be taken by the regulatory body when performing reviews, assessments or inspections throughout the authorization or licensing process. Such an approach should be reflected in regulations and guides, and the extent of reviews, assessments or inspections should be appropriate to the magnitude and the nature of the hazard and the risk posed by the nuclear installation.”*

S9 **Suggestion: The Government should consider reviewing, and where necessary revising, regulations on the scope and extent of the involvement of environmental authorities in the nuclear safety authorization process.**

POLICY ISSUE – PUBLIC PARTICIPATION IN THE LICENSING PROCESS

The policy issue discussion on “Public participation in the licensing process” was opened by M. Pospíšil, Director of the UJD SR Division of Legislation and Legal Affairs. He presented an overview of the relevant international, European and national legislation, the Slovakian Environment Impact Assessment (EIA) procedure and the licensing process of nuclear facilities; a description of the actual status regarding a complaint of a non-governmental organisation (NGO) made in 2009; and a description of the key national arrangements concerning public access to information. The presentation was followed by active discussion between UJD SR and the IRRS Team.

The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, usually known as the Aarhus Convention, was entered into force in Slovakia on 5th March 2006 through relevant national legislation amendments.

The ‘first’ licence for construction of Mochovce nuclear power plants 3 and 4 was issued in 1986. During summer 2009, a NGO complained to the Compliance Committee of Aarhus Convention that the public was not properly involved in the process leading to the granting of a construction license for the new NPP at Mochovce. The NGO argued that changes in plant design occurred during construction and that, in accordance with the Aarhus Convention, the public should have been involved and properly informed. In 2010, the Compliance Committee requested to clarify the process of access to information concerning these new builds and eventually made a decision that Slovakia should hand over all relevant documents including those used to authorise construction in 1986. In 2011, the Slovak Government expressed its disagreement with this final decision and confirmed the licensing process was implemented in compliance with the legislation of the time. However, it was explained to the IRRS Team that this case highlights difficulties in complying with Aarhus Convention requirements as implemented in the national legislation. UJD SR mentioned that, according to the legislative amendments necessary to comply with Aarhus Convention, from now on all parties that have been involved in the licensing process for construction must also be involved in all other UJD SR decision-making processes for authorising modifications, however minor. This could lead to a very heavy burden on the regulatory body.

With regard to securing an appropriate level of participation by interested parties in aspects of decision-making, the IRRS Team representatives considered that UJD SR should review, with relevant government departments, the corresponding legislation and regulations and reach an agreement on how the interested parties could be involved in accordance with a graded approach, commensurate with the radiation risks associated with the given issue.

The IRRS team gained the impression that with a more thorough and systematic revision of UJD SR’s policy and practice on public relationship, most of the problems encountered might be eliminated in the future.

During the discussion, it was emphasised that the regulatory body should promote only safety through its regulatory activities, and must not have any role associated with actively promoting the nuclear industry. The importance of openness and transparency in regulatory activities was discussed.

CONCLUSION

The IRRS Team found that there is a robust legal framework in place for licensing nuclear facilities. Requirements for the submission of documents to enable UJD SR’s regulatory decisions are clear and appropriate. The IRRS Team noted that the level of engagement of interested parties in the decision-making process for licensing/authorisation can present a challenge to regulatory resource and efficiency, and suggested that the government reviews this in order to explore the potential for a more graded approach commensurate with the radiation risks associated with the given issue.

6. REVIEW AND ASSESSMENT

6.1. GENERAL

Due to the current situation in Slovakia, with facilities at various stages of construction, operation and decommissioning, UJD SR is involved in a wide range of activities which require review and assessment activities.

UJD SR regularly reviews and assesses from the point of view of nuclear safety of nuclear facilities the following types of documents:

- periodic safety reviews of operating facilities,
- safety assessments related to plant modifications,
- event investigation reports,
- operational topical reports (e.g., various reports from the pre-operational tests after completing the refuelling and maintenance outages),
- updated final safety analysis reports, including new and up-dated deterministic and probabilistic safety analyses corresponding to various back-fitting activities,
- safety analyses related to modifications to SSCs,
- modifications of safety related documents,
- regular reports from the operating plants,
- preliminary safety reports of NPPs under construction,
- commissioning plans,
- QA reports of the various tests of SSCs during the construction and commissioning process,
- decommissioning plans, and
- QA reports from the decommissioning process.

The majority of these review and assessment activities are related to the various types of authorisation processes, thus the goal of the review is to assess the credibility of some assessment provided by a licensee. Some other parts lead to a legal authority decision only in case of revealing some condition endangering the safety of the plant.

6.2. ORGANISATIONAL ASPECTS OF THE REVIEW AND ASSESSMENT PROCESS

When the goal of the review and assessment process is to establish the basis for a regulatory decision, the process is controlled by an internal UJD SR procedure: Directive on Documentation Assessment. The extent of documentation necessary for the different cases is laid down in the Annexes of the Atomic Act. The time frame for the process is determined by the Administrative Proceedings Act and the Atomic Act. Depending on the category of the case this time frame may extend from 30 days to two years.

The department director general assigns the case to a division director, who selects an inspector to take the role of responsible assessor. They decide on the human and other resources necessary for the review and assessment activity of the given case. Whenever it is necessary, experts from other divisions are also invited to participate in the process. If no suitable expert is available within UJD SR for some specific topic, external experts are contracted to support the process. Depending on the financial extent of the contract, the hiring of external experts must be arranged through the public procurement process. The internal process of hiring external experts is controlled by the Quality Manual of UJD SR. For cases when deterministic safety analysis calculations or PSA calculations need to be reviewed, the Division of Safety Analysis and Technical Support of UJD SR is involved. This division has the necessary tools and expertise to carry out independent control calculations, when deemed necessary.

According to the related procedures and the practice of UJD SR, every step of the process is well documented and the documents are preserved in the archives of UJD. Several such files have been presented during the interviews.

If the review and assessment process reveals that some pertinent information is missing from the submitted documents, the authority sends a letter demanding the necessary additional information by a set deadline. The period until the information is received is not included in the time allocated for the regulatory process. If the information is not delivered by the deadline, the case will be closed without a resolution. To collect some smaller pieces of information direct communication with the representatives of the licensee is allowed through informal channels (phone calls, e-mail or consultation) though the minutes of these communications are to be preserved in the file of the case.

For large scale review and assessment cases, such as reviewing a periodic safety assessment report or a submission to obtain the first licence for operation of a new plant, a detailed review plan is set up and the review team arranges regular meetings on the progress of the review. To support the review and assessment process related to Mochovce units 3-4 under construction, an open framework contract was established with an external organisation. This arrangement may extend UJD SR’s capabilities to carry out the foreseen large-scale review and assessment activities related to the commissioning periods of the units under construction.

Several of the review and assessment activities are not related directly to materials submitted for approval, but relate instead to event investigation reports or inspection findings. These activities are carried out according to different internal procedures. For event evaluation the “internal event analysis group” (having regular meetings every 3 months) with varying composition is responsible. Independent analysis of every event is carried out by a contractor since 2008 providing root cause analysis, review of proposed corrective actions and additional corrective actions. It can be considered as a very specific review and assessment activity that for a selected group of experts of UJD SR a few days long meeting is organized every year, where they review the most important recent international events to draw lessons to apply for the domestic plants and/or for the regulatory activities.

6.3. CAPABILITY FOR INDEPENDENT REGULATORY AUDIT CALCULATIONS

UJD SR has a Division of Safety Analysis and Technical Support, which is staffed with highly experienced safety analysts. They carry out a significant amount of safety analysis work, partly on the basis of a yearly plan to systematically re-calculate the deterministic and probabilistic safety analyses of the supervised plants. When any urgent or unplanned need for a safety analysis arises, they also are capable to carry out the appropriate analysis in most of the cases. When their capacity, computational tools or expertise is not sufficient, they can play the role of “intelligent customer” for any external technical support organisation.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req. 24, Para. 4.33 states that <i>“Prior to the granting of an authorisation, the applicant shall be required to submit a safety assessment, which shall be reviewed and assessed by the regulatory body in accordance with clearly specified procedures.”</i>
(2)	BASIS: GSR Part 4 Req. 21, Para. 4.71 states that <i>“...the regulatory body has to carry out a separate independent verification to satisfy itself that the safety assessment is acceptable and to determine whether it provides an adequate demonstration of whether the</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>legal and regulatory requirements are met.”</i>
(3)	BASIS: GS-G-1.1 Para. 3.15 states that <i>“Review and assessment should be carried out in accordance with principles and criteria set out in regulations and guides. The review and assessment work necessitates effective communication and interaction between different units of the regulatory body. The main parameters, characteristics and results of review and assessment should be recorded and retained, in written form, for future reference.”</i>
GP4	Good Practice: UJD SR carries out its review and assessment activities in well controlled manner, based on established procedures. The personnel are well trained for the job, including the experienced and dedicated division equipped with various safety analysis tools to carry out control safety analyses.

6.4. UPDATING OF REGULATIONS RELATED TO REVIEW AND ASSESSMENT

It is notable that around the turn of the last year several of the key nuclear safety regulations were amended. Several of these are closely related to the review and assessment activity of UJD SR. During the IRRS self-assessment period, some older versions of the relevant requirements were still in effect. It is notable that the new versions of the regulations largely only codified the former practice, and thus the actual practice has been going on in line with the latest regulations.

6.5. ACCEPTANCE CRITERIA

The most important requirements are laid down in the Atomic Act and also detailed in legally binding nuclear safety requirements in UJD SR Decree No. 430/2011 (originally Regulation No. 50/2006). Further details on the different criteria are given in the Regulation on the quality management system (UJD SR Decree No. 431/2011). Although the criteria stipulated in generally binding documents are generic and qualitative, the permit holder or applicant is obliged to provide to UJD SR the quantitative values for criteria, which must be documented, justified and verified. In many cases UJD SR asks permit holder or applicant for experimental justification of the provided values. In important cases UJD SR invites an external support for such justification and verification. External support could be provided via a commercial contract or organized via various OECD/NEA, EU projects.

For a new plant the process is as follows: When the application for site license and construction permit is submitted to local construction authority, UJD SR – as a co-authority – has to approve a set of basic, nuclear safety related documents, including the document on the quality of the plant to be built. According to the regulation on quality management system this document shall contain all the acceptance criteria values for the deterministic and probabilistic analyses, as well as the possible radiological effects of different accident categories. These criteria are to be approved by UJD SR and later on the safety analyses shall prove that the criteria are met. For the existing plants, when the construction permits were issued, these rules were not yet in effect. Later on (during the ‘90s), when their first SARs were prepared, the acceptance criteria had been negotiated between the licensee and the authority. Some of those criteria were modified (typically strengthened) since.

The UJD SR guide on deterministic safety analysis lays down acceptance criteria in an indirect manner, while as ultimate criteria it refers to limitations on radiological effects on the representative group of the public. For the specific values for different design basis situation reference is given to Governmental Resolution No. 345/2006, which – among others – specifies the radiological limitations for the general

public. This document, however, has no specific limitations or criteria for design basis accident conditions for a NPP. There is another reference there to a letter (dated 25.01.2007) from UVZ SR to UJD SR, in which the UVZ SR proposes specific dose values for such situations, but that letter is has no legal status. However, in practice for the existing plants, UJD SR reviews the safety analyses according to the limiting dose values set out in the letter.

According to the opinion of the IRRS Team, the approval of the detailed criteria for a new plant in the phase of construction permit phase, when UJD SR only acts as a co-authority may not be the best approach, taking into account the large volume of documentation to review and the limited timeframe. The vague bases for judging the appropriateness of proposed criteria may cause difficulties in establishing proper criteria. A somewhat more prescriptive approach, while maintaining the necessary flexibilities, could ensure a more straightforward licensing process. The current, apparently adequate, approach in Slovakia may be a result of successful negotiations between the authority and the licensees.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	<p>BASIS: GSR Part 4 Req. 5, Para. 4.18 states that <i>“The first stage of carrying out the safety assessment shall be to ensure that the necessary resources, information, data, analytical tools as well as safety criteria are identified and are available.</i></p> <p><i>(d) The safety criteria defined in national regulations or approved by the regulatory body to be used for judging whether the safety of the facility or activity is adequate have been identified. This could include applicable industrial safety standards and associated criteria.”</i></p>
(2)	<p>BASIS: GSR Part 4 Req. 16, Para. 4.57 states that <i>“Criteria for judging safety, sufficient to meet the fundamental safety objective and to apply the fundamental safety principles established in Ref. [1] as well as to meet the requirements of the designer, the operating organisation and the regulatory body, have to be defined for the safety analysis. In addition, detailed criteria may be developed to assist in assessing compliance with these higher level objectives, principles and requirements, including risk criteria that relate to the likelihood of anticipated operational occurrences or the likelihood of accidents occurring that give rise to significant radiation risks.”</i></p>
(3)	<p>BASIS: GSR-Part 4, Req. 16, Para. 4.57 states that <i>“Criteria for judging safety, sufficient to meet the fundamental safety objective and to apply the fundamental safety principles ... as well as to meet the requirements of the designer, the operating organisation and the regulatory body, have to be defined for the safety analysis.”</i></p>
(4)	<p>BASIS: GSR-Part 4, Req. 14, Para. 4.49 states that <i>“It has to be determined in the safety analysis whether the facility or activity is in compliance with the relevant safety requirements and regulatory requirements.”</i></p>
(5)	<p>BASIS: GSR-Part 4, Req. 14, Para. 4.50 states that <i>“The consequences arising from all normal operational conditions (including start-up and shutdown, where appropriate) and the frequencies and consequences associated with all anticipated operational occurrences and accident conditions have to be addressed in the safety analysis.”</i></p>
S10	<p>Suggestion: UJD SR should consider defining more solid bases for setting the numerical acceptance criteria for design basis accidents and also should consider reviewing the</p>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

stage in the licensing process of a new plant, where the acceptance criteria are approved.

6.6. PERIODIC SAFETY REVIEW – AGEING MANAGEMENT

According to the Slovak Republic legal system the periodic safety reviews (PSR) play a central role in nuclear plant regulatory oversight. The operating licence of the plant is renewed upon the approval of the PSR for maximum 10 more years. In this scheme, the lifetime extension of the plants does not require any specific arrangement. However, since a new license is issued every ten years, the significance of the PSR is extremely high. In concert with this approach, ageing management is basically taken care of within the framework of PSR. Apart from reviewing the submitted PSR material, UJD SR arranges several inspections related to the topics covered in the PSR process.

The regulations controlling the PSR are well elaborated. However – in light of the Fukushima event – they may need to include re-evaluation of external hazards (natural and man-induced) to the power plant explicitly in the list of activities to be addressed in the PSR.

6.7. OPERATIONAL EVENT INVESTIGATION, EXPERIENCE FEEDBACK

For operational event investigation UJD SR has a rather well elaborated organisational approach and organisational arrangements. The relevant regulation (UJD SR Decree No. 48/2006) lays down the basic contents of the event investigation reports to be submitted by the 20th of the month following the incident. The IRRS Team noted that this approach is unusual, since it allows a quasi-random time interval for the length of the investigation (ranging from 3 to 6 weeks), thus this may not be an optimal approach. The regulation is very simple and concise, and does not specify many details on how the licensee should carry out a proper event investigation. The practices, however seem to be quite correct.

CONCLUSION

It can be stated in general that the review and assessment activities at UJD SR are well organised and are being carried out at a high quality level. For the operating plants, the most significant review and assessment activities are related to the PSR process, when the license of the plants is renewed for the subsequent ten years. The IRRS Team noted that the applicable legal requirements and criteria for a new build licensing are quite difficult to follow and has suggested that this issue be reviewed.

7. INSPECTION

7.1. GENERAL

The Atomic Act gives UJD SR and its inspectors the responsibility to carry out inspections. Inspectors are allowed to enter at any time and without any restrictions, nuclear facilities or workplace where nuclear activities are performed by licensees. The inspection activity shall be carried out only by appointed civil servants.

To verify that the licensee is in compliance with regulatory requirements and with the conditions specified in the authorisation, UJD SR has developed a complete, comprehensive and robust inspection process fully implemented by inspectors. A procedure describes the different phases of the process including planning, implementation, reporting, submitting the demands to the licensee and evaluation of the answers.

UJD SR carries out different types of inspections such as: routine inspections (carried out by resident inspectors at Mochovce and Bohunice sites), team inspections and special inspections. Inspections may be announced or non-announced.

Each year UJD SR elaborates a programme of inspections (149 inspections planned in 2012). The scope of this programme takes into account requirements and suggestions from different technical divisions and results of previous inspections. The inspection programme is established according to a graded approach taking into account feed-back experience, new events or results of probabilistic safety assessment etc. This programme is then approved by the UJD SR chairperson and issued to the operational divisions.

For major licensees (operators of nuclear facilities) a firm core of the inspection programme is repeated each year as a minimum and complemented, when needed, with additional topics. The inspection guides for routine inspections may stipulate the frequency of specific topics. For other licensees, such as owners using small quantity of nuclear material, the inspections may be carried out less frequently but the period between two inspections shall not be more than three years. The IRRS team observed that this rule is respected but this is not formally mentioned in the general inspection procedure.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Para. 4.50 states that <i>“The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorisation. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections), and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach.”</i>
R5	Recommendation: UJD SR should stipulate in its general inspection procedure the maximum period between two inspections in the areas and programmes to be inspected.

It appears that UJD SR rarely carries out inspections which consist of a direct simulation exercise of the deployment of certain functions (fire brigade or deployment of emergency means like an additional mobile diesel for example). UJD SR mentioned that such inspections for fire brigades at Mochovce or Bohunice are rather carried out by inspectors of the Ministry of Interior and added that information is exchanged between these authorities. The IRRS team considers that the presence of UJD SR could be

useful to observe, during joint inspections, the behaviour of the fire brigade staff when they intervene in a safety sensitive environment (presence of items important to safety). In addition, UJD SR rarely carries out inspections during non-working days or non-working hours. Finally, considering that many different ministries and authorities perform their own inspections on nuclear sites, the IRRS team considered that joint inspections with inspectors from other different administrations (Public Health Authority, Ministry of Environment, Ministry of Interior etc.) could be conducted.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Para. 4.52 states that <i>“Regulatory inspections shall cover all areas of responsibility of the regulatory body, and the regulatory body shall have the authority to carry out independent inspections. Provision shall be made for free access by regulatory inspectors to any facility or activity at any time, within the constraints of ensuring operational safety at all times and other constraints associated with the potential for harmful consequences. These inspections may include, within reason unannounced inspections. The manner, extent and frequency of inspections shall be in accordance with a graded approach.”</i>
(2)	BASIS: GS-G-1-3 Para. 3.13 states that <i>“The main advantage of announced inspections is that the regulatory inspector is able to discuss plans and needs with the operator’s personnel in advance in order to secure assurances that documentation will be available for inspection, personnel will be available for interview and activities can be inspected as scheduled. Hence, the announcement of inspections may enhance their effectiveness. The advantage of unannounced inspections is that the actual state of the facility and the way in which it is being operated can be observed. Inspections may be carried out at any time of the day or night so as to provide a more complete picture of the situation at the facility.”</i>
(3)	BASIS: GS-G-1.3 Para. 3.21 states that <i>“In addition to the regulatory body, other governmental bodies may participate in the regulatory process according to national practices. The regulatory body should establish and maintain liaison throughout the lifetime of the facility with other relevant governmental bodies, and should develop and, where practicable, formalize working procedures with such bodies, whether at the national, regional or local level. Such bodies may undertake their own inspections of the facility, and it may be appropriate for the regulatory body to conduct joint inspections with one or more of them. In planning an inspection programme and determining a specific inspection plan, the regulatory body should consider whether inspectors from these bodies should participate in the inspection.”</i>
S11	Suggestion: UJD SR should consider extending the scope of its inspection programme to include, among others, inspections outside working hours and joint inspections with other authorities.

Inspections are carried out by inspectors from different technical divisions of UJD SR. Each inspector is appointed following a dedicated training programme designed according to his/her future competence area.

It takes an average of one and a half years to obtain this appointment which is formalised by the delivery of an Inspector ID card.

To carry out inspections, inspectors use dedicated inspection guides. For routine inspections those guides often take the form of a check-list with specific checkpoints. The list of checkpoints (for example specific

tests performed by the licensee of items important to safety) may be adapted according to the results of probabilistic safety assessments.

UJD SR performs every 6 months an assessment of inspection results carried out during this period. Conclusions of this assessment are written in a report submitted to the board of directors. The annual programme may then be modified and additional inspections or potential enforcement may be decided accordingly.

In addition, UJD SR has launched a project to improve again its inspection process and has been developing a new generation of guides, adding new topics and promoting the use of checklists. Such improvement should make inspections more consistent and enhance the UJD SR inspection process.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Para. 4.51 states that <i>“The regulatory body shall record the results of inspections and shall take appropriate action (including enforcement actions as necessary). Results of inspections shall be used as feedback information”</i>
GP5	Good Practice: Every 6 months UJD SR performs a systematic and formal assessment of inspection results to draw information from experience feedback and has launched a project for continual improvement of its inspection process.

The results of inspections and the conclusions about conformity made from these results are recorded. The report lists actions that are raised and each action is identified by a number which indicates without any ambiguity the inspector who generated it.

Such a report is systematically prepared for an inspection carried by a non-resident inspector. Resident inspectors, who carry out daily routine inspections, report daily to the head of nuclear safety division and establish, every three months, a report that summarizes their observations and findings.

Information and findings extracted from these inspections are systematically made publicly available on UJD SR Website.

7.2. NUCLEAR POWER PLANTS

UJD SR has presented its organisation to control systems, structures and components (SSCs) and constructions during the construction phase of a nuclear power plant.

Designers or Manufacturers of SSCs important to safety are considered as suppliers of the licensee and according to the regulation must be supervised / audited by the licensees. UJD SR may observe the licensee during these supervisions, including when these supervision activities are performed in foreign countries. UJD SR may also impose, when assessing the quality assurance programmes related to these operations, its presence during particular important activities (hold point).

The IRRS team observed that such regulatory activities are not considered as inspections. Consequently, the findings gathered are not recorded in the same format as inspection reports.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-G-1-3 Para. 3.16 states that <i>“Whenever the operator makes use of the services or products of a contractor, the regulatory body should include the contractor’s activities in its inspection programme in all stages of the authorisation process. This may comprise</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

inspection and surveillance of the design and manufacturing of components, including, where appropriate, activities performed in other States.”

S12 **Suggestion:** UJD SR should consider improving the recording and storing of information and findings gathered when witnessing activities (with the licensee) at supplier’s facilities, including when these facilities are located in foreign countries.

The IRRS team visited the Mochovce NPP site. The site includes two NPPs (WVER 440/213) in operation and two other reactors (same type) in construction.

There are now 3 resident inspectors based in Mochovce. Two of them are responsible for the control of units 1 and 2. The third one is responsible for the control of units 3 and 4 under construction.

Inspectors can participate in joint inspection with other resident inspectors as necessary. The IRRS team considered that inspections are carried out with a high level of competence and professionalism.

The IRRS team witnessed 4 routine inspections carried out by the resident inspector in charge of Mochovce unit 2. These routine inspections were conducted in the control room, the turbine building, the fresh fuel storage in the nuclear zone of Mochovce unit 2 and in the essential service water system building common for units 1 and 2. The UJD SR inspector is accompanied by a licensee representative during the inspection.

The IRRS team observed from the field observations and discussions with plant management that resident inspectors are very well respected by licensee staff.

At present only one resident inspector controls the construction of two units. In the future this could be insufficient due to the increasing level of activity at these units. UJD SR has plans to increase the inspector staff to three.

7.3. WASTE FACILITIES

UJD SR’s section for waste and decommissioning performs inspections according to procedures and internal guidelines in UJD SR’s management system, as described in section 7.1.

During the site visit to the A1 plant and the waste treatment and vitrification facilities on the Bohunice site, the IRRS Team was informed that the inspection programme is made available to UVZ SR to allow for joint inspections. Although not organised in a formalised way, joint inspections take place. The inspection programme is also published on the UJD SR web-site. The inspection plan encompasses specific as well as thematic inspections. In addition to planned (pro-active) inspections, unplanned (reactive) inspections may be carried out as necessary (see Suggestion in Section 7.2.).

CONCLUSION

UJD SR has a comprehensive and robust inspection process fully implemented by competent inspectors who are respected by the licensee’s staff. UJD SR uses a graded approach to establish its annual programme and takes into account information drawn from experience feed-back to ensure continuous improvement of its inspection process.

The IRRS Team considered that UJD SR could extend the scope of its inspection programme in order to make their inspections more efficient on certain topics and to improve the capture of information gathered during inspections and surveillance activities of the design and manufacturing activities performed in foreign countries.

8. ENFORCEMENT

8.1. GENERAL

The Atomic Act sets that UJD SR “*shall impose : 1. to reduce power or to suspend operation or decommissioning of nuclear installation, or the construction thereof, 2. suspend managing of nuclear material, radioactive waste or spent fuel 3. Sanctions pursuant to this Act,*”

UJD SR has established and implemented an enforcement policy within the legal framework for responding to noncompliance by licensees.

Enforcement actions include:

- Verbal notification,
- Written notification,
- Financial penalties, and
- Restriction or revocation of the authorisation.

Enforcement actions taken by UJD SR are commensurate with the seriousness of the non-compliance.

UJD SR has a specific procedure that describes the process to be followed during enforcement actions. The possibility to begin an enforcement procedure is discussed and the beginning of the process is then authorised by the relevant division director.

The enforcement process in its entirety includes an appeal process for dealing with complaints received from licensees.

In 2011 two fines have been addressed to Mochovce NPPs operator (SE). One was the consequence of the absence of qualification of several fire brigade staff. The second one was in relation to a failure to comply with a technical specification detected on a pumping system.

For both of them, SE had triggered appeal processes. In both cases the penalties were confirmed by the UJD SR Chairperson.

CONCLUSION

UJD SR has established and implemented an enforcement policy within the legal framework for responding to noncompliance by licensees and has taken enforcement action twice during 2011.

9. REGULATIONS AND GUIDES

9.1. EXISTING REGULATIONS AND GUIDES

The legal structure of regulatory activity for the nuclear safety in Slovak Republic is well established with the hierarchy of Acts, Regulations (level of decree) and Guides, which is basically a similar structure to the IAEA safety standards. The Atomic Act No.541/2004, approved by the Parliament, is the most important part of the legal framework for the safety of nuclear power plants. Besides, the Act No.355/2007 in the field of health protection against radiation is provided by the Public Health Authority of the Slovak Republic (UVZ SR) under the Ministry of Health.

The Atomic Act stipulates nuclear safety requirements for nuclear installations for siting, design, construction, commissioning, operation, decommissioning and closure of the repository. UJD SR regulates all stages of the lifetime of nuclear installations, management of nuclear materials in nuclear installations, import and export of nuclear materials and equipment in accordance with the special regulations. The Atomic Act includes specific provisions for the regulation of nuclear power plants. Thus, the requirements for lifetime stages are explicitly stipulated in the specific articles.

On the basis of the Atomic Act, UJD SR enacts binding regulations for its licensees and for its scope of authority (13 Regulations at present). The process for establishing regulations is governed by the Legislative Rules which generally regulate the procedure of preparing, submitting and approving the regulations issued by all the ministries and other central governmental bodies, as well as UJD SR. The requirements for the design, construction, commissioning, operation, and, decommissioning of nuclear power plants are stipulated in UJD SR Regulation No.430/2011. Also the Regulation No.33/2012 contains the PSR requirements. These regulations establish a framework for more detailed conditions and requirements to be incorporated into individual authorisations and their attached conditions for NPPs.

General requirements as regards waste management are found in Regulation No. 430/2011 Coll. on nuclear safety requirements. More specific requirements are found in Regulation No. 30/2012 Coll. The regulations recognize the specific characteristics of spent fuel and waste management and disposal activities, and take due consideration to the concept of graded approach.

The legal framework for nuclear safety has been updated through the amendment of relevant acts in 2004, 2006, 2007, 2008 and 2011. 4 out of 13 UJD SR regulations have been amended and two new ones have been published around the beginning of 2012.

UJR SR regulations are listed as follows:

- 1) Regulation No. 30/2012 Coll., laying down details of requirements for the handling of nuclear materials, nuclear waste and spent nuclear fuel.
- 2) Regulation No. 33/2012 Coll., on the regular, comprehensive and systematic evaluation of the nuclear safety of nuclear equipment.
- 3) Regulation No. 46/2006 Coll. on dual-use goods, which are under the ÚJD SR supervision
- 4) Regulation No. 47/2006 Coll. on maximum limits of small quantities of nuclear material and radioactive waste in respect of which no nuclear damage is expected and therefore subject to exclusion from the third party liability regime
- 5) Regulation No.48/2006Coll. on details of notification of operational events and events during shipment, as well as details of investigation of their reasons
- 6) Regulation No. 51/2006 Coll. on details concerning requirements for provision of physical protection
- 7) Regulation No. 52/2006 Coll. on professional competency

- 8) Regulation No. 54/2006 Coll. on accountancy for and control of nuclear material as well as notification of selected activities
- 9) Regulation No. 55/2006 Coll. on details concerning emergency planning in case of nuclear incident or accident
- 10) Regulation No. 57/2006 Coll. on details concerning the requirements for shipment of radioactive material
- 11) Regulation No. 58/2006 Coll. on details concerning the scope, content and method of preparation of nuclear installation documentation needed for certain decisions.
- 12) Regulation No. 430/2011 Coll. on details on nuclear safety requirements for nuclear facilities
- 13) Regulation No. 431/2011 Coll. on a quality management system

UJD SR also issues safety guides (28 Guides as of May 2012). The guides complete and specify the requirements of binding legal regulations. Recommendations and acceptance criteria in the guides are not generally binding, but they assist the licence holders to fulfil the corresponding regulatory requirements. The observation of the guides helps to ensure the implementation of conditions for safe use of nuclear energy or carrying out activities related to the use of nuclear energy.

Processes for the development, review and approval of regulations and guides are covered by the UJD SR Quality Manual (QM) and internal procedures. Internal procedures describe in detail UJD SR internal work processes. Following directives are directly related to the development of the regulations and guides:

- Directive on Preparation and Internal Process of Authorised Regulations Approval; and
- Directive on Safety Guides Issuance

FINDINGS ABOUT THE COVERAGE OF REGULATIONS

In the course of the mission it became clear that the operational events are handled basically well both at the licensees and at UJD SR. However Regulation No. 48/2006 of UJD SR on “Laying Down Details on the Manner of Reporting Operational Events and Events in Transportation and Details of Ascertaining Causes Thereof” is too concise and basic, while there exist no UJD SR guide for the licensees to determine how to carry out an investigation. Therefore, it is suggested that the regulations should be made more detailed or should elaborate an appropriate guide for event investigation. It is noted that the latest amendment of the Atomic Act contains a quite detailed set of requirements for operational experience feed-back.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: SSR-2/2, Req. 24 states that <i>“The operating organisation shall establish an operating experience programme to learn from events at the plant and events in the nuclear industry and other industries worldwide.”</i>
(2)	BASIS: SSR-2/2, Req. 24, Para. 5.28. states that <i>“Events with safety implications shall be investigated in accordance with their actual or potential significance. Events with significant implications for safety shall be investigated to identify their direct and root causes, including causes relating to equipment design, operation and maintenance, or to human and organisational factors.”</i>
S13	Suggestion: UJD SR should consider elaborating more detailed guidance for the licensees for operational events evaluation and investigation.

9.2. PROCESS FOR DEVELOPMENT OF REGULATIONS AND GUIDES

As described in the previous section, two internal directives govern the whole process of development of the regulations and guides. Designated UJD SR staff members coordinate the process of preparation and approval of regulations through the following phases:

- a) Elaboration of the draft regulation,
- b) Draft revisions through internal consultations,
- c) Submission of the internally approved draft regulation on comments to relevant authorities, legal and natural persons,
- d) Evaluations of inter-ministerial reviews,
- e) Publication of approved regulation in the Collection of Laws.

Development process of the safety guides has a generally accepted process such as planning, preparation of the draft guide, comment process, the issue for a trial period, and final issue. This process is described in detail in the relevant directive including the date of planning, the period for comment and trial use, formatting of the final version, etc.

Development of new or revised regulation and guides in UJD SR usually starts from comparing relevant internationally accepted set of requirements and conditions established by international or regional organisations like EU, IAEA, WENRA, OECD/NEA and sometimes by other normative sources on which current regulations or guides are build up. Revision of regulations and guides is initiated by the responsible staff in the relevant division when the Atomic Act, other laws and legal regulations are revised or developed. In addition, new research results, operational experiences, global trends and lessons learned from the international society could be important elements for the initiation of revision. No specific frequency for regular revision is given in the procedures.

During the discussions, UJD SR showed the comparison sheets between UJD SR documents and internationally accepted requirements, which were performed a few years ago. However, it was found that some UJD SR guides do not fully include up to date information. For example, a new guide (BNS I.11.1/2012) was revised from the old version (2008) for the purpose of reviewing the deterministic safety analysis on the design basis accidents as well as severe accidents.

The IRRS team understood that further revisions of this document will consider SSR-2/1 (Safety of NPPs: Design, published in 2012) and SSR-2/2 (Safety of NPPs: Commissioning and Operation, published in 2011).

Therefore, a regular and systematic checking process is suggested to be specified in the relevant internal directives to transpose international requirements and operational experience efficiently and effectively. It is also identified that the UJD SR has a plan to revise and develop 16 Guides by 2014, but SSR-2/1 is not considered.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req. 33 states that <i>“Regulations and guides shall be reviews and revised as necessary to keep them up to data, with due consideration taken of relevant international safety standards and technical standards and relevant experience gained.”</i>
S14	Suggestion: UJD SR should consider improving internal directives to better reflect the way in which it reviews international standards and translates them into national regulations and guides.

9.3. PROMOTION OF REVIEW OF THE REGULATIONS AND GUIDES TO INTERESTED PARTIES

Process of development of regulations is described in UJD SR management system directives which include a step to take comments from Stakeholders. The process for establishing regulations is governed by the Legislative rules. These rules regulate the procedure of preparing, submitting and approving the regulations issued by ministries and other state administration bodies. Every drafted regulation is discussed with relevant authorities and institutions in the inter-department notifications and comments procedure. UJD SR informs about starting of working groups by e-mail and/or letter. When interdepartmental notifications and comments procedure involved authorities and institutions are informed automatically through the website. They also make comments through that website. The relevant comments are taken into consideration if they are drafted by the obligatory-commenting bodies or the public consisting of more than 500 people. Every process lasts 15 working days and is undertaken through the legislative website. Since Slovakia is member of EU, all proposals for laws and regulations in the field of nuclear energy are sent to European Commission for comment by member states of the EU and Commission. This obligation is derived from the directive 98/34/EC as amended by directive 98/48/EC and also according to articles 30-33 EURATOM Treaty.

With regard to the development of safety guides, consultations are also organized for each draft safety guide with interested parties. Process for the development of guides requires 3 to 6 weeks as a period for expert comments. Also one year trial period is given after completing the drafting for checking of its suitability.

The regulations and guides are prepared by UJD SR specialists and are discussed and reviewed by the parties as follows, and in accordance with legislative rules:

- a) Regulations: authorisation holders, governmental administrative organisations, non-governmental organisations, general public, EU Commission etc., and
- b) Safety guides: authorisation holders, technical supporting organisations, universities, other technical organisation working in the nuclear field, etc.

CONCLUSION

It is recognized in general that UJD SR has established acts, regulations and guides to specify principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and activities are based. Also, activities at UJD SR for development and revision of regulations and guides are well organized and are being carried out according to UJD SR internal directives. The IRRS Team noted that UJD SR should elaborate more detailed guidance for licensees on event investigation and operational experience feedback and propose an effective way to keep the regulations and guides up to date.

10. EMERGENCY PREPAREDNESS AND RESPONSE

10.1. GENERAL REQUIREMENTS

The legislative and statutory framework has been established at national level in order to prepare for and manage the consequences of radiation emergencies.

The main legislative acts which include basic requirements for radiation emergency preparedness and response are:

- Act of the NC SR No.42/1994 Coll. on Public Civil Protection;
- Act of the NC SR No.575/2001 Coll. on Organisation of Governmental Activities and of Central State Administration;
- Act of the NC SR No.387/2002 on state crisis management in crisis situations during peace time;
- Act of the NC SR No. 129/2002 Coll. on the Integrated Rescue System
- Act of the NC SR No.541/2004 Coll. Peaceful Uses of Nuclear Energy (Atomic Act) :
- Governmental Resolution No.345/2006 Coll. on Basic Safety Requirements for the Protection of the Health of Workers and the General Public against Ionizing Radiation (transposition of Council Directive 96/29/EURATOM);
- UJD SR Regulation No.55/2006 Coll. on particulars in emergency planning in case of an incident or an accident;
- Act of the NC SR No.355/2007 Coll. on Protection, Support and Development of Public Health and on alteration and amendment to certain laws;
- Convention on Nuclear Safety;
- Convention on Early Notification of a Nuclear Accident;
- Convention on Assistance in case of a Nuclear Accident or Radiological Emergency;
- Bilateral agreements with other countries (Hungary, Austria, Check Republic, Poland, Ukraine, Romania, Russian Federation, Slovenia, Germany, USA, Bulgaria, France, Canada);
- National emergency response plan to nuclear or radiological accidents (NERPNRA, 2001).

The Ministry of Interior is assigned as a national coordinating authority of the Slovak Republic for preparedness and response to all emergencies, including radiation emergencies.

Act 387/2002 establishes the Integrated Crisis Management System (ICMS) for all emergencies. The integrated crisis management system includes all governmental organisations, county and local authorities with responsibilities in emergency situations. A *National emergency response plan to nuclear or radiological accidents* (NERPNRA, 2001) is a part of ICMS and includes the coordination of tasks and duties at national level, according to the current legislative framework.

In the event of radiation emergencies, UJD SR is the technical adviser for the national decision makers, being responsible for evaluating the progress and consequences of incidents or accidents at nuclear installations and developing recommendations for decision makers. In the preparedness phase, UJD SR has responsibility for approving the on-site emergency plans of facilities, checking and validating the off-site emergency plans of local authorities, inspecting the adequacy of emergency arrangements (including training and exercises) at nuclear installations and approving the emergency planning zones for each nuclear installation. UJD SR has established its own emergency response centre and a well-defined emergency organisation. The Emergency Response Centre of UJD SR operates as a technical support organisation for the National Crisis Centre in the event of a nuclear emergency at an NPP or in case of transport of nuclear material.

As part of the national crisis management system, UVZ SR acts as regulatory authority for radiation protection in Slovak Republic and has assigned roles and responsibilities for emergency preparedness and response to radiation events. In case of radiation emergencies UVZ SR shall “provide information to public on the radiation situation, special events and possible irradiation, on risks caused by irradiation and on measures and interventions for the reduction of irradiation in radiation accidents” (Act 355/2007).

UVZ SR has no operational emergency response centre and no logistics for proper evaluation and assessment of nuclear emergency situations. Nevertheless, internal provisions do exist at the level of UVZ SR for the establishment of a national centre for management of the radiation monitoring network. It is intended that the centre will be used in the future as a national focal point for collection, validation and evaluation of radiation monitoring data and for elaborating recommendations for public protection in the event of radiation emergencies. A notification point for conventional health hazards is established at the level of Ministry of Health but there is no specific facility or logistics for emergency management.

The IRRS Team has observed that UJD SR and UVZ SR have some similar responsibilities during nuclear and radiation emergencies. They both have to assess the situation and provide recommendations for public protection. Some roles and responsibilities appear common to both authorities, but no clear coordination exists in the current legislation.

To complete the existing legal framework, agreements have been made by UJD SR with ministries (Ministry of Interior, 1996; Ministry of Defence, 1996, renewed 2000) and local authorities (County offices for civil protection Trnava and Nitra, 1999) in the field of notification, exchange of information and technical support in case of radiation emergencies. There is no formal agreement in place between UJD SR and the Ministry of Health. In the official letter sent to UVZ SR in January 2012, UJD SR offered to UVZ SR cooperation and use of its ERC as well as results obtained in case of nuclear emergency concerning evaluation for preparation of recommendations for the National Crisis Centre to take measures to protect public.”

The IRRS Team concluded that the legislative framework is not clear in many aspects related to emergency preparedness and response to radiation emergencies. This observation supported the recommendation and suggestion about improved coordination of authorities set out in Chapter 1.

The IRRS Team considered that inviting an IAEA Emergency Preparedness Review (EPREV) mission to the Slovak Republic would help to enhance the emergency preparedness and response arrangements and support development of the national crisis management system.

Although the *National emergency response plan to nuclear or radiological accidents* (NERPNRA, 2001) addresses the IAEA categorization of radiation related threats, the existing categorization is not used to establish a concept of operations for each threat category and a graded approach to emergency preparedness arrangements commensurate with the potential magnitude and the nature of hazards. Nevertheless, the existing assessments of the radiation risks (nuclear and radiological) provide a good basis for further implementation of international requirements. The basic policy for assessment of radiological threats at all levels (licensee, local, regional and national) should be upgraded for facilities and practices and should follow the IAEA requirements (GS-R-2).

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GS-R-2 Para. 3.15 states that <i>“The full range of postulated events shall be considered in the threat assessment. In the threat assessment, emergencies involving a combination of a nuclear or radiological emergency and a conventional emergency such as</i>
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RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>an earthquake shall be considered. Any threat associated with nuclear facilities in other States shall also be considered. In the threat assessment any populations at risk shall be identified and, to the extent practicable, the likelihood, nature and magnitude of the various radiation related threats shall be considered.”</i>
R6	Recommendation: The Government should review and if necessary revise the national level of the assessment of all radiological threats in line with international requirements and for updating of the National emergency response plan to nuclear or radiological accidents.

10.2. FUNCTIONAL REQUIREMENTS

10.2.1. Establishing emergency management and operations

Emergency plans are available at national, local and nuclear installation level. At the national level, the "National emergency response plan to nuclear or radiological accidents" (NERPNRA, 2001) has been adopted. Bilateral agreements concerning information exchange exist with neighbouring countries and international institutions.

The National Crisis Centre is organised by the Ministry of Interior (MoI) as decision-making in event of emergencies (Act 387/2006). The Ministry of Interior runs a 24/7 national “112” warning and notification system.

In case of a nuclear accident UJD SR is responsible for assessing the situation at the nuclear installation independently of the licensees' own evaluation. The operator and local authority (County Crisis Commission) have a duty to take the necessary actions until the National Crisis Centre is activated. The Ministry of Interior is further responsible for alerting the authorities and the public.

Following activation, the National Crisis Centre assesses the overall situation in the event of a general emergency and proposes necessary measures to the Government. The Government decides on possible measures, which are announced to Counties Crisis Commissions for coordinating and implementing protective and rescue actions at local level.

10.2.2. Identifying, notifying and activating

In an accident situation, the operator is responsible for timely alert of UJD SR as well as the MoI (Act 541/2004, UJD 55/2006). The classification criteria are written down in the emergency preparedness regulations of the nuclear installations and include three grades of severity of accident:

- Grade 1 – alert,
- Grade 2 - site emergency, and
- Grade 3 - general emergency.

UJD SR maintains a group of stand-by engineers on duty (24/7). Messages sent by the NPP following an incident notification show the classification of the incident based on the emergency classification mentioned above and also INES scale. The format of messages is similar to the format of USIE messages of the IAEA:

- In case of an event of Grade 1 emergency operator sends a short standard notification to UJD SR and MoI.

- In event of a Grade 2 emergency the operator notifies UJD SR, MoI and all counties in the surrounding area of the NPP (e.g. 5 counties at distance of about 40 km around Mochovce NPP). Concerning public protection, only activation of the county crisis commission is considered for this grade.
- In event of a Grade 3 emergency the operator notifies UJD SR, MoI, and other competent authorities and all counties in the surrounding area of the NPP. With regard to protection of the county citizens, this message has to contain recommendations about protective actions and prognosis of the development of the accident, e.g. propagation of plume after probable release.

After notification of an event of a grade 2 or 3, the local authority has to start implementing the off-site emergency plan without delay. The on-site emergency plan of NPP operator and off-site emergency plans of counties have to be coordinated (UJD 55/2006).

UJD SR is the National Contact Point for Early Notification Convention and Assistance Convention. In case of an emergency classified as grade 2 or grade 3 UJD SR notifies IAEA (through USIE) and EU (through ECURIE), and counterparts under bilateral agreements.

10.2.3. Taking urgent protective actions

Governmental Resolution 345/2006 “On basic safety requirements for protecting the health of workers and population against ionizing radiation” provides generic criteria for public protection in event of radiation emergency as well as generic action levels for foodstuffs.

Several networks for environment monitoring and laboratory analysis of environmental samples and foodstuff are operated by different national authorities (e.g., Ministry of Health, Ministry of Defence, Ministry of Environment) and private companies (e.g., NPPs). Operation of these networks is currently guided by Ministry of Health, but not properly coordinated. Sampling procedures and investigation levels are not harmonized. Currently, it seems that UVZ SR is preparing for the coordination of the national radiation monitoring system, in accordance with legal provisions included in the Law on Public Health. The Government should establish and operate a unified national radiation monitoring system independent from that of the NPPs and should ensure its results could be used by competent authorities in normal situations as well as during emergencies. This issue is also addressed in chapter 11.2.3, where a recommendation is formulated.

The concept of operational interventional levels (OILs) is not introduced. Default OILs for taking protective actions in event of radiation emergency are not defined in Governmental Resolution 345/2006. NERPNRA and off-site emergency plans for protection of the public in the event of a severe nuclear power plant or spent fuel storage emergency do not contain any OILs for protective action implementation.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

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| (1) | BASIS: GS-R-2 Para. 4.71 states that <i>“For the precautionary action zone and the urgent protective action planning zone, arrangements shall be made for promptly assessing any radioactive contamination, releases of radioactive material and doses for the purpose of deciding on or adapting the urgent protective actions to be taken following a release of radioactive material. This capability shall include arrangements for promptly conducting environmental monitoring and monitoring for contamination on people (e.g. evacuees) within the emergency zones, including the availability of designated trained teams and instrumentation. In addition, arrangements shall be made for promptly assessing the results</i> |
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RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>of environmental monitoring and monitoring for contamination on people in order to decide on or to adapt urgent protective actions to protect workers and the public, including the application of operational intervention levels (OILs) with arrangements to revise the OILs as appropriate to take into account the conditions prevailing during the emergency.”</i>
R7	Recommendation: The Government should make provisions to update, at national level, operational intervention levels (OILs) in line with international requirements.

10.2.4. Protecting emergency workers

Dose criteria for protection of emergency workers performing rescue work in radiation accidents or emergencies are set by Governmental Resolution 345/2006. In case of emergency work in radiation accidents or emergencies that are directly connected with saving human lives, saving significant material or cultural values or preventing the development of a radiation accident with possible significant social and economic consequences, the tasks have to be designed and performed so that total effective dose for the duration of works would not exceed 500 mSv and equivalent dose to skin would not exceed 5000 mSv for emergency workers. Such an exposition can be accepted on an exceptional basis only and can be performed solely by volunteers that were informed of the risks associated with performing the works. For other emergency works including recovery operations the tasks have to be designed and performed so that total effective dose for the duration of works would not exceed 100 mSv and equivalent dose to skin would not exceed double the single year occupational dose limit.

Individual doses of occupational exposure and emergency exposure are recorded and kept in the central data base managed by UVZ SR (see chapter 11.1.).

10.2.5. Assessing the initial phase

The classification criteria used by facility operators to evaluate the severity of the accident are developed under the supervision of UJD SR. Classification algorithms are specific to each reactor unit. The classification algorithm uses decision event trees, emergency action levels for operational parameters and on-site observables as criteria to designate the most probable and most conservative source term from a library of about 40 pre-calculated source terms for nuclear reactor or spent fuel pool emergencies. The classification criteria are developed in accordance with the IAEA guidelines in TECDOC-955 (1997). The classification algorithms are included in the respective computer code and in written procedures for manual evaluation of the event in case of failure of the computer system. UJD SR uses same algorithms for independent evaluation of a nuclear accident.

10.2.6. Keeping the public informed

The emergency plan of nuclear installations includes the notification method for persons within the nuclear facility area and within the threatened area, and a population warning and informing method in event of a nuclear emergency. A system for warning and public information in emergency planning zones around nuclear installations is in place and includes sirens and telecommunication means such as local TV- and radio-broadcasting.

In event of an emergency, UJD SR provides information to the public on technical matters concerning the plant, the assessment of conditions on-site, the probable evolution of the conditions and radiological forecasts for the event. Internet and other mass media could be used for these purposes and for providing instructions during an emergency. The official Web-site on UJD SR (<http://www.ujd.gov.sk>) operates in

two modes. The “default mode” is used for day-to-day information to the general public about the activity of UJD SR as a regulatory body for nuclear safety. In “emergency mode” the same Web site is used to provide stakeholders and the public with actual information throughout an emergency.

10.3. INFRASTRUCTURAL ELEMENTS

10.3.1. Organisation

Depending on the severity of the emergency situation, there are three levels of activation and response of different components of the national crisis management system:

- the first level involves emergency committees of nuclear installations with the primary role of mitigating the consequences of the accident,
- the second level is organized at regional level and involves county offices of the local authority responsible for deciding on actions to protect the public, property and environment in the emergency planning zones,
- the third level is established at national level and is mainly composed of the National Crisis Centre which is responsible for overall management of the emergency when its progress extends beyond the territory of one county.

Operators of nuclear installations and local authorities have their own emergency organisations, with intervention personnel designated for different positions in the emergency organisation.

UJD SR has its own emergency organisations, with pre-defined response actions:

- to analyse the status of the nuclear installation,
- to prepare prognoses of accident development and radiological impact to the population and environment and, based on that, to suggest recommendations to protect public,
- to prepare working materials and recommendations for the UJD SR chairperson, who is a member of the National Crisis Centre,
- to co-operate with the Ministry of Interior’s Operational Expert Group (OEG),
- to execute supervision of activities of the licence holder during the emergency,
- to inform EU, IAEA and neighbouring countries in accordance with international commitments of the Slovak Republic made under the auspices of UJD SR (multilateral and bilateral agreements),
- to inform the public.

The emergency organisation of UJD SR involves four working groups with dedicated roles: the reactor safety group (including the site-inspector subgroup) which is mainly dealing with nuclear safety analysis; the radiation protection group (including the mobile dosimetry subgroup) which performs radiological consequences assessments and provides recommendations for protection of population; the logistic support group which is mainly involved in communication and logistic actions (receiving and sending messages, registering, IT and other logistical support); and the public information group which has responsibility to communicate with the public, media, international organisations. The emergency organisation is designed to work on three shifts. The emergency manager coordinates and takes decisions for UJD SR response actions in emergency situations. There are 6 senior experts assigned in this position within UJD SR. For any other position in the emergency organisation there are 4 experts assigned, which are selected based on professional experience and skills.

The IRRS Team concluded that efficient emergency arrangements are in place at the level of UJD SR, operator and local authorities, with harmonized planning and response actions in the event of accidental

events at nuclear installations. UJD SR has sufficient human resources dedicated to emergency preparedness with regard to education, inspection on site and assessment of exercises.

Nevertheless, at national level it seems that coordination of the response between the different central authorities with responsibilities in emergency situations is not well established. The IRRS Team concluded that arrangements should be developed for the establishment of a group of experts at national level as technical support for the National Crisis Centre, which should prepare a joint coordinated set of recommendations. The existing facilities, logistics, human resources and technical expertise at the level of UJD SR are very good and could be used for technical evaluations with its premises being designated as a focal point for the national group of experts.

10.3.2. Plans and Procedures

The Atomic Act provides detailed requirements for establishing on-site and off-site emergency plans at nuclear installations. The IRRS Team recognized that solid well-established practical arrangements are in place at the level of the operator of the nuclear installation and local public authority for a harmonized and coherent response in case of a nuclear emergency. Both UJD SR and UVZ SR are involved in the process of evaluation and approval of the on-site and off-site Emergency Response Plans.

Detailed emergency procedures and / or instructions are available at the level of the operators and UJD SR and they have been presented to the IRRS Team during the visits.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 Para. 5.19 states that <i>“The operating organisation of a facility or practice in threat category I, II, III or IV shall prepare an emergency plan that covers all activities under its responsibility, to be adhered to in the event of an emergency. This emergency plan shall be co-ordinated with those of all other bodies having responsibilities in an emergency, including public authorities, and shall be submitted to the regulatory body.”</i>
GP6	Good Practice: The detailed requirements existing in the current legislation for on-site and off-site planning provide for very efficient, reliable and harmonized arrangements at local level and therefore for prompt and coordinated response at the first level of intervention in case of emergency at nuclear facilities.

10.3.3. Logistical support and facilities

UJD SR has established a very well equipped Emergency Response Centre (ERC). The ERC is provided with IT equipment, special software for nuclear analysis (SPRINT and ESPRO) and radiological consequences assessments (ESTE code at the level of NPPs, Slovakian system RTARC, European system RODOS), dedicated communication lines with the nuclear power plants and communication means (including redundant systems and backup electricity supply). All systems are maintained operational and tested periodically. In addition, procedures, checklists and operational manuals are available for the use of UJD SR emergency organisation staff and updated regularly.

The transfer of plant parameters and radiological and meteorological data from nuclear installations to the ERC is realized through dedicated communication lines. The proper response of UJD SR’s emergency organisation depends on the reliability of communication with nuclear installations, local and national authorities, partner states and international organisations. Few redundant systems exist (including satellite communications) and secured reliable Internet service is provided at Governmental level. The availability of all systems should be tested for external events.

Concerning logistical aspects, the circulation of documents inside the UJD SR emergency organisation has been considered by the IRRS Team as being quite laborious and this should be improved in the future. A dedicated document management system should be established for data and information exchange in nuclear emergencies, with due consideration to the needs of all partner organisations with roles and responsibilities under the national crisis management system. According to the discussions carried out, some activities are already in progress, but not completed yet, related to the establishment of such software platform for data and information management during emergencies.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 Para. 5.6 states that <i>“The organisational relationships and interfaces between all the major response organisations shall be established.”</i>
(2)	BASIS: GS-R-2 Para. 5.25 states that <i>“Adequate tools, instruments, supplies, equipment, communication systems, facilities and documentation (such as procedures, checklists, telephone numbers and manuals) shall be provided for performing the functions specified in Section 4. These items and facilities shall be selected or designed to be operational under the postulated conditions (such as the radiological, working and environmental conditions) that may be encountered in the emergency response, and to be compatible with other procedures and equipment for the response (such as the communication frequencies of other response organisations), as appropriate. These support items shall be located or provided in a manner that allows their effective use under postulated emergency conditions.”</i>
S15	Suggestion: UJD SR should consider improving the system for management of exchange of information among groups in its emergency organisation.

10.3.4. Training, drills and exercises

Extended training and exercise programs are in place at the level of UJD SR. The training and exercise programs are annually updated. There is initial training for newcomers and refresher training for emergency personnel provided on an annual basis. In addition, special psychological training *“Development of team work in crisis situations”* is provided annually for the emergency managers of UJD SR.

During the mission, a nuclear response exercise (of 3 hours duration) was organized by UJD SR and Mochovce NPP in order to provide the IRRS Team with the possibility to observe the implementation of the existing arrangements during simulated emergency situations. The general performance of UJD SR and Mochovce NPP staff was well appreciated by the IRRS Team.

Annual exercises are organized by the operators of nuclear installations, in which local authorities and UJD SR take part. The involvement of UJD SR in the conduct and evaluation of emergency exercises at facility and local levels is considered by the IRRS Team as a good approach with important benefits for the continuous improvement of practical emergency arrangements at local level. Nevertheless, UJD SR should consider involving other organisations in training activities and exercises in order to jointly test the emergency arrangements at national level also.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GS-R-2 Para. 5.35 states that <i>“The officials off the site responsible for making decisions on protective actions for the population within the precautionary action zone and/or the urgent protective action planning zone (see para. 4.48) shall be trained in the strategy for protective action and shall regularly participate in exercises.”</i>
S16	Suggestion: The Government should consider making provisions for the use of UJD SR capabilities for conducting training and exercises as a basis for enhancing at national level the training and exercise programmes related to the management and response in radiation emergencies.
(1)	BASIS: GS-R-2 Para. 5.31 states that <i>“The operator and the response organisations shall identify the knowledge, skills and abilities necessary to be able to perform the functions specified in Section 4. The operator and the response organisations shall make arrangements for the selection of personnel and for training to ensure that the personnel have the requisite knowledge, skills, abilities, equipment, and procedures and other arrangements to perform their assigned response functions 81, 82. The arrangements shall include on-going refresher training on an appropriate schedule and arrangements for ensuring that personnel assigned to positions with responsibilities for emergency response undergo the specified training.”</i>
GP7	Good practice: The extensive and regular training programs conducted by the UJD SR for its own interventional staff and emergency managers are recognized as a good practice.

CONCLUSION

It is recognized in general that a legislative and statutory framework has been established to prepare for and manage the consequences of radiation emergencies.

Efficient emergency arrangements are in place at a local level between UJD SR, operator and local authorities, with harmonized planning and response actions in case of accidental events at nuclear facilities. UJD SR has a well-established Emergency Response Centre and sufficient well trained human resources dedicated to respond in the event of emergencies at nuclear facilities.

Both regulatory authorities UJD SR and UVZ SR have responsibilities assigned for supporting the decision making process. Clear allocation of responsibilities and coordination in the field of emergency preparedness and response for radiation emergencies between UJD SR and UVZ SR is needed. Therefore, legislation should be revised and improved and arrangements should be established at national level for efficient management and preparedness for radiation emergencies.

11. OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR FACILITIES, RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL

11.1. OCCUPATIONAL RADIATION PROTECTION

The regulatory authority for occupational radiation protection in Slovakia is the Úrad Verejného Zdravotníctva Slovenskej Republiky (UVZ SR) <http://www.uvzsr.sk/en/> which is the Public Health Authority of Slovakia, subordinated to the Ministry of Health. During meetings and interviews with representatives of UVZ SR and through visits to nuclear facilities at Mochovce and Bohunice, questions that had arisen during the analysis of the advanced reference material were answered and additional information was collected.

The occupational radiation protection legislation relevant to occupational radiation protection in Nuclear Facilities is based on the following acts and regulations:

- Collection of acts 355/2007 – On protection, support and Development of Public Health and on amendments and Supplements to certain acts.
- Collection of acts Government Order 345/2006 – On basic safety requirements for protecting the health of workers and population against ionizing radiation,
- Government regulation 346/2006 – On radiation protection requirements of outside workers exposed to the risk of ionizing radiation during their activities in controlled areas.

UVZ SR is responsible for regulating the occupational radiation protection (ORP) of workers at the operating and decommissioned nuclear power plants in Slovakia, and also in the nuclear waste facilities. The facilities include the two units under decommissioning and the two operational units at the Bohunice site, and the two operational units and two units under construction at the Mochovce site. Also included in the ORP scope of the UVZ SR are all facilities for low, middle and high level active waste due to NPP operations.

The structure of the UVZ SR relevant to the ORP in nuclear facilities is shown in the figure below. Environmental monitoring laboratories are also available in the UVZ which carry out work relevant to the occupational and public radiation protection group.

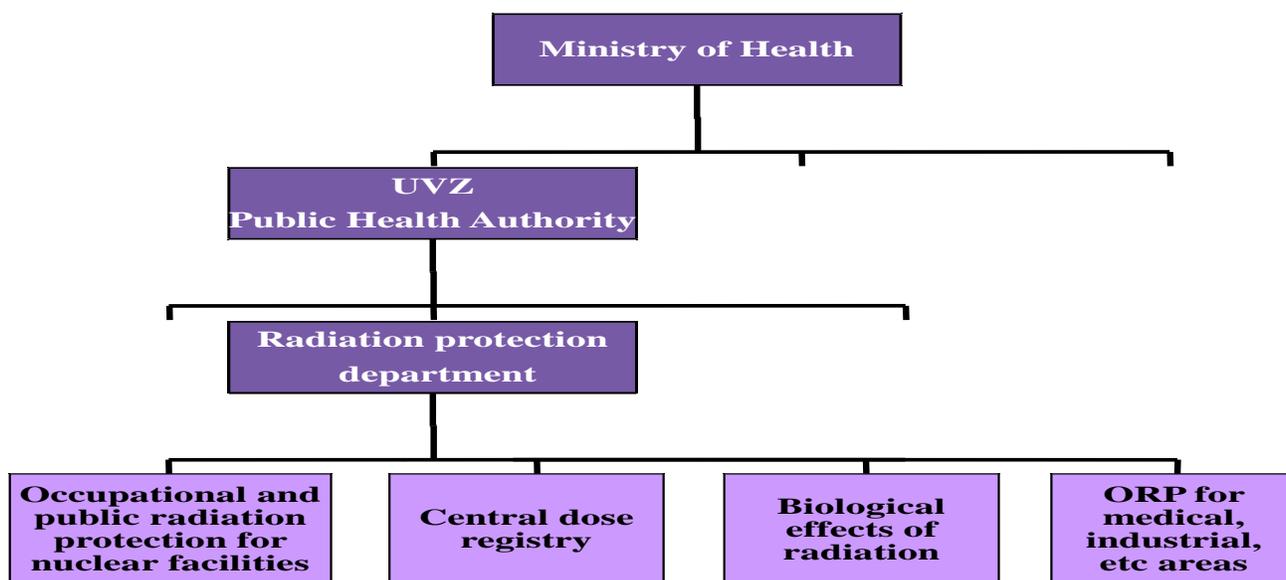


Figure 1. Organizational structure of the UVZ SR

In the area of ORP related to nuclear facilities, the activities and responsibilities of the Occupational and public radiation protection group are mentioned in Act number 355/2007 Collection of Laws, paragraph 5 and are detailed below:

- Participation in the drafting of the national acts and regulations.
- Evaluation of safety and design documentation;
- Emission of authorizations for the start of construction, for the commissioning, for the operation of the NPP for the renewal of the operational license and for decommissioning.
- Evaluation of the operator ORP documentation, including the radiation protection programme procedures, working instructions and records.
- The programming and carrying out of routine and non-routine inspections.
- The interruption of a specific operation or plant shut-down when the activities are placing the health of workers or the public at risk.
- Authorisation of the dosimetry for external radiation and internal dosimetry services, and also the authorisation of the responsible person for the service.
- Evaluation of the quarterly and annual ORP reports emitted by the NPP operators in order to perform a trend analysis.
- Participation in international networks such as ISOE (Information System on Occupational Radiation Protection) and HERCA (Heads of the European Radiological protection Competent Authorities) and in the European Commission for drafting of ORP norms and standards.

UVZ SR has implemented the ISO 9001 quality system for all its operations. Discussions were held as to the appropriateness of the application of some chapters of the ISO 17020 standard: "General Criteria for the Operation of Various Types of Bodies Performing Inspection".

There are around sixteen persons working in the Radiation Protection Department. There are four staff members working in the group for occupational and public radiation protection for nuclear facilities, with three persons of university level and one administrative assistant. There is one head of the group, who is also responsible for ORP in the operating nuclear facilities, and two persons responsible for ORP in the decommissioned NPP and for waste, decommissioning, clearance and public radiation protection. The group also has responsibilities in the area of emergency planning and response in the case of a NPP accident. Of the three persons of university level working in this group, one has reached retirement age, and one is close to retirement.

Through meetings and interviews with UVZ SR staff, and also through interviews with the NPP operators, it is clear to the IRRS Team that the present staff of the group for occupational and public radiation protection has reached a high level of competence in their area. However, there is the issue of the maintenance of the level of competence through knowledge management and transfer of knowledge from senior inspectors to junior inspectors, and also the issue of the staff required to attend the significant and ever increasing demands in this area due to the expanding capacity of electricity generation through nuclear power. In comparison to other countries with similar responsibilities for occupational radiation protection in NPPs, the IRRS Team considered the number of staff working in this area to be low.

The occupational radiation protection at the nuclear power plants in Slovakia has reached a high standard. There has been a continuous tendency for dose reduction through optimization processes, and the Slovak plants show some of the lowest annual collective dose statistics for the WWER reactor type.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1 Para. 4.11 states that <i>“The regulatory body has to have appropriately qualified and competent staff. A human resources plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities for them to perform all the necessary regulatory functions.”</i>
(2)	BASIS: GSR Part 1 Para. 4.13 states that <i>“A process shall be established to develop and maintain the necessary competence and skills of staff of the regulatory body, as an element of knowledge management.”</i>
R8	Recommendation: UVZ SR should put in place a human resource management program which assures that the staff can carry out the foreseen activities which attend the present and future expanded utilization of nuclear power in Slovakia so that specific knowledge and experience in the area of occupational radiation protection is preserved.

11.1.1. Structure of the regulations on occupational radiation protection

The Slovakia basic safety requirements for radiation protection (345/2006) are based on the Council Directive 96/29/EURATOM for the basic safety standards for the protection of health of workers and the general public against the dangers arising from ionizing radiation.

The Slovakia basic safety requirements apply to occupationally exposed persons and members of the public. It places primary responsibility for occupational protection on the operator of the nuclear facilities.

The provisions of Government Resolution 345/2006 are generally consistent with the requirements of the IAEA Basic Safety Standard. However, they differ in the following respects:

- Occupationally exposed persons are classified in Categories A and B depending on whether the magnitude of the likely annual doses received will exceed 6 mSv.
- In the BSS a controlled area is not defined by the expected dose but is one where the worker needs to follow local rules including, as appropriate, the use of protective equipment to minimise exposure.
- Dose constraints as required by the IAEA BSS are not required by regulation to be set by the Regulatory Body in the case of normal operations. Dose constraints are in place, for example at the A-1 facilities at the Bohunice site, the dose constraint is 10 mSv per year.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1 Req. 31 states that <i>“Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration taken of relevant international safety standards and technical standards and of relevant experience gained.”</i>
S17	Suggestion: UVZ SR should consider planning the up-dating of the occupational radiation protection regulations in accordance with the ICRP 103 and subsequent ICRP recommendations and the GSR Part 3 interim version.

11.1.2. Arrangement under the radiation protection programme

To carry out its inspections, UVZ SR needs up-to-date equipment, including dose rate meters that read in ambient dose equivalent, H*(10), and an adequate number of surface contamination monitors. Breathing zone portable air monitors or a grab sampler also in the breathing zone would complete the equipment inventory.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1, Req. 3 Para. 4.4 states that “...the government shall be responsible for ensuring that the regulatory body has sufficient resources to fulfil its statutory obligations.”
S18	Suggestion: UVZ SR should consider reviewing the fixed and mobile equipment available for their inspection activities and occupational radiation protection at the nuclear facilities.

11.1.3. Individual monitoring

UVZ SR operates a central dose registry, which receives on a monthly basis the individual dose records of the occupationally exposed workers in Slovakia. The NPP operators have in place action levels for monthly doses above 1 mSv, however, if the monthly dose exceeds 6 mSv, an immediate communication is sent to UVZ SR. There are procedures in place which specify the dose levels, the time limits, the contact persons and contact information in the case of higher exposures.

The workers are not informed directly of their passive dosimeter results. The managers are informed of the dose results and may change the work schedule for certain workers as a result of this. The workers are informed of their doses on request.

The central registry is responsible for emitting and controlling the Slovakian Radiation Passport which is extensively used by the workers in the NPP. In total for Slovakia, around 750 passports per year are emitted.

UVZ SR inspectors have access to personal dosimetry records. While occupationally exposed personnel in the controlled areas of operational NPPs use active dosimeters as a guide to exposures, the passive (film and TLD) dosimeters supplied by the NPP operators or other approved dosimetry service providers constitute the official dosimetry records.

There are four authorised dosimetry services for external radiation. One is operated by the operator of the Mochovce site which comprised film dosimetry for photons and TLD dosimetry for neutrons. The second service is operated by the operator of the Bohunice site, under the same conditions. The other two services are commercial dosimetry services, attending mainly the medical area. The dosimetry services are authorised by UVZ SR. The services are also subject to inspections and requirements of the Slovakian Metrological service. The Responsible Person operating each service is also authorised by UVZ SR.

There is an internal dosimetry service operated by the operator at each of the NPP sites, comprising quick-scan equipment, a whole body counter and urine analysis.

11.1.4. Radiation Protection Experts/Officers

Government Order 345/2006 establishes that UVZ SR may recognise as a Qualified Expert a person who has knowledge specified in the Appendix 11 of the Order which includes basic knowledge, specialist knowledge and knowledge for the specific area of radiation protection, for example, radiation protection

in an NPP. These experts are subject to a written and oral examination before authorisation, and are submitted to a re-cycling course every 5 years. The radiation protection expert is the Radiation Protection Manger for the NPP. Under his or her management there are a number of technicians who are trained in-house.

CONCLUSION

The occupational radiation protection of the occupationally exposed workers in the operational nuclear power plants of Slovakia has attained very good levels of annual collective dose. It was not possible in the time allocated to review the overall standard of the ORP in the other facilities. The UVZ SR group assigned to the area of occupational radiation has achieved a high level of competence in the area; however there are issues of knowledge management and the necessary level of staffing.

In conclusion to the review of the regulatory aspects of occupational radiation protection, advantage could be taken from existing assessment tools such as the Occupational Radiation Protection Appraisal Service developed by the IAEA. The IAEA can provide, at the request of the government of Slovakia, an independent appraisal service for some or all aspects of occupational radiation protection.

Moreover, the comprehensive review of all responsibilities and activities of UVZ SR, including the regulatory oversight of non-nuclear facilities in Slovakia will be performed during the IRRS follow-up mission.

11.2. RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL

11.2.1 Waste management

Slovakia has four reactors in operation, three being decommissioned and two under construction. Dismantling is going on for reactor A1 that was closed after an accident which caused the partial melting of some fuel elements, as well as for the recently shut down NPP V-1. The result is that Slovakia has a complete spectrum of types of waste to be managed as well as spent fuel: operational wastes, institutional wastes, dismantling and decommissioning wastes, with activity levels ranging from low to very high levels.

At present, a waste disposal solution is available only for short lived very low (VLLW) and low level waste (LLW). For other types of waste and spent fuel a proposal for a final destination is either in the process of licensing or solutions are under consideration.

Basic legal and regulatory requirements for the management of radioactive waste are laid down in the Act No.541/2004 Coll. on peaceful use of nuclear energy (Atomic act), and in associated regulations issued by UJD SR.

UJD SR regulations were up-dated and put into force in late 2011 and early 2012 thereby implementing the latest IAEA waste safety requirements as well as WENRA (Western Europe Nuclear Regulators' Association) safety reference levels. General requirements as regards waste management are found in Regulation No. 430/2011 Coll. on nuclear safety requirements. More specific requirements are found in Regulation No. 30/2012 Coll., which details the requirements for the handling of nuclear materials, radioactive waste and spent nuclear fuel. The team observed that the updated regulatory framework for waste management corresponds well with existing IAEA requirements, and that the system to classify radioactive waste fully complies with IAEA recommendations. The team noted, however, that it is not yet defined when the spent nuclear fuel becomes high-level radioactive waste.

Another important legislation is the Act No. 238/2006 Coll. on the National Nuclear Fund for Decommissioning of Nuclear Facilities and Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund). The Act lays down the basic requirements for collection of financial resources in separate accounts to cover future costs for decommissioning of nuclear facilities as well as for management and disposal of spent fuel and nuclear waste, including the necessary research and development activities.

National policy and strategy

The existing strategy for management and disposal of radioactive waste from nuclear reactors (“Strategy for the back end of nuclear energy sector”), approved by the Governmental decision No. 328/2008, is based on the investigation of alternative approaches, i.e.:

- disposal of spent fuel or high level waste in a geological disposal facility in the Slovak Republic,
- disposal of spent fuel in an international/regional geological disposal facility; or
- export of spent fuel to Russian Federation for reprocessing with bringing back reprocessing waste

The Government recently approved a conceptual program on geological research and exploration of the territory of the Slovak Republic for the period 2012 – 2016, including the option of geological disposal of spent fuel. The intention is to provide basis for a political decision around 2025.

The existing strategy is being updated in 2012, taking into consideration the transposition of the European Council Directive 2011/70/Euratom, which establishes a Community framework for the responsible and safe management of spent fuel and radioactive waste. It was observed that the progress in the disposal program has been slow, and has even stopped at times, possibly reflecting insufficient commitment to the program at Government level. The programme of activities for the period until 2025 requires sufficient funding and commitment so that an informed political decision on geological disposal can be made.

Not having a final solution may have a negative implication on properties of the waste already generated, or to be generated, (e.g. ageing phenomena), as regards compatibility with the not yet defined back-end solution. Postponing the decision on a firm strategy for the back-end of spent fuel and waste management may have consequences also for establishment of necessary funds.

Current strategy as regards funding of costs for decommissioning of facilities and management of radioactive waste from the back-end of nuclear fuel cycle is based on several funding mechanisms. Funds are collected and included in the nuclear waste fund. These funds should cover also historical legacy wastes. The current strategy indicates a 70 year period for recovery of the historical debt. At the same time the anticipated design lifetime of nuclear power reactors (40 years) may be extended – if considered safe – by means of renewing the license every ten years.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: SSR 5 Req. 1 states that <i>“The government is required to establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities shall be clearly allocated for disposal facilities for radioactive waste to be sited, designed, constructed, operated and closed. This shall include: confirmation at a national level of the need for disposal facilities of different types; specification of the steps in development and licensing of facilities of different types; and clear allocation of responsibilities, securing of financial and other resources, and provision of independent regulatory functions relating to a planned disposal facility.”</i>
(2)	BASIS: GSR Part 5 Req. 2 states that <i>“To ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles [2] and with international instruments, conventions and codes that have been ratified by the State. The national policy and strategy shall form the basis for decision making with respect to the management of radioactive waste.”</i>
S19	Suggestion: The Government should consider ensuring that the updated policy and strategy document regarding the back-end of spent fuel management will be implemented in a timely manner.
(1)	BASIS: GSR Part 1 Req. 2 states that <i>“The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated (...)”</i> <i>2.5. (...) This framework for safety shall set out the following: (...)</i> <i>(16) Responsibilities and obligations in respect of financial provision for the management of radioactive waste and of spent fuel, and for decommissioning of facilities and termination of activities.”</i>
(2)	BASIS: SF-1 Principle. 7, Para. 3.29. states that <i>“Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generation.”</i>
S20	Suggestion: The Government, when assessing the period for recovery of the historical debt of funding, should take into account the risk involved in a long period of fund collection and consider that no undue burden is put on future generations.

Predisposal Waste Management

After the reactors A-1 and V-1 had been permanently shut down and the spent fuel removed from the reactors, the responsibility for decommissioning was transferred to the company JAVYS, a.s. Furthermore, operation of the spent fuel storage facility as well as facilities for waste processing, storage and disposal is the responsibility of JAVYS, a.s.

The Atomic Act states that “The Disposal of radioactive waste or spent fuel based on authorisation issued by the Authority, may only be undertaken by a legal person independent of the originator of radioactive waste, founded or established by Ministry of Economy of the Slovak Republic”. It is also stated that “The responsibility for the safe management of radioactive waste prior to their receipt at the repository (i.e. disposal facility according to the definition) shall be with the originator of the radioactive waste.” In addition the legislation states that “The responsibility for disposal of radioactive waste from nuclear installations and disposal of institutional radioactive waste as well as the responsibility for closure of repository and its institutional control shall be with the State under conditions laid down by this Act and other generally binding legal regulations.”

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	<p>BASIS: GSR Part 1 Req. 2 states that <i>“The Government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated.”</i></p>
(2)	<p>BASIS: GSR Part 5 Req. 4 states that <i>“Operators shall be responsible for the safety of predisposal radioactive waste management facilities or activities (...)</i></p> <p><i>3.17. The operator is responsible for establishing and implementing the overall strategy for the management of the waste that is generated, and for providing the required financial securities, taking into account interdependences among all steps in waste management, the available options and the national radioactive waste management policy.”</i></p>
R9	<p>Recommendation: The Government should review the current legal and regulatory framework and identify any need for clarification in regards to the division of responsibilities between the waste owner/generator and the waste management organisation.</p>

The recently updated regulations and associated guidance issued by UJD SR provide practical requirements that encourage waste minimization. One example could be found in the area of decommissioning when new or revised techniques, methods and processes are proposed for introduction. It was observed that, in order to obtain authorization or a new waste treatment process, the waste management organization, JAVYS a.s., is required to present three alternative options and justify the preferred option in terms of the amount of waste produced. This, along with licensees’ own efforts, has resulted for example in a lower generation of operational radioactive waste at the NPPs.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	<p>BASIS: SF Para. 3.29 states that <i>“Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generations; that is, the generations that produce the waste have to seek and apply safe, practicable and environmentally acceptable solutions for its long term management. The generation of radioactive waste must be kept to the minimum practicable level by means of appropriate design measures and procedures, such as the recycling and reuse of material”</i></p>
(2)	<p>BASIS: GSR Part 5 Req. 8 states that <i>“All radioactive waste shall be identified and controlled. Radioactive waste arising shall be kept to the minimum practicable. (...)</i></p> <p><i>4.8. The recycling of reuse and materials has to be applied to keep the generation of radioactive waste to the minimum practicable, provided that protection objectives are met.</i></p> <p><i>4.9. The authorized discharge of effluent and clearance of materials from regulatory control, after some appropriate processing and/or a sufficiently long period of storage, together with reuse and recycling of material, can be effective in reducing the amount of radioactive waste that needs further processing or storage. The operator has to ensure that these management options, if implemented, are in compliance with the conditions and criteria established in regulations or by the regulatory body. The regulatory body also has to ensure that the</i></p>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

operator gives due consideration to non-radiological hazards in applying such options.”

GP8

Good Practice: UJD SR has established a comprehensive and exhaustive set of regulations and guidance in the area of waste management and decommissioning that encourages waste minimisation.

Disposal

The basis for the licensing of facilities for processing and disposal of radioactive waste is laid down in the Atomic Act. Other relevant acts are the Act No. 50/1976 on land use planning and construction code (Building Act) and the Act No. 24/2006 Coll. on Environmental Impact Assessment.

The licensing procedure for the nuclear installation consists of the following main steps; siting, construction, commissioning, operation and decommissioning as well as closure of a disposal facility. The basic conditions for granting authorization is the elaboration and submission of the safety documentation which is specified in annexes to the Atomic Act and in Regulation No. 58/2006 Coll. and in 31/2012. Coll.. Authorization/licensing as regards occupational and public radiation protection are issued by UVZ SR.

The decision on siting is issued by the regional construction authority, pending the approval of UJD SR and of other regulatory authorities (UVZ SR, labour inspection bodies etc.). For the subsequent authorizations (construction, commissioning, operation, decommissioning and closure of a disposal facility) UJD SR exercises its competency as a construction authority and state administration authority for nuclear safety. Its decisions are based on its own decisions as well as on the opinion of other relevant regulatory authorities and a number of other bodies and organizations of the state administration.

These other bodies and organizations of state administration issue their own evaluations and licenses within their area of competence.

The situation described above was one of the reasons the IRRS Team has recommended to the Government in chapter 1.7 of this report to revise the legal framework in order to warrant an effective coordination between licensing bodies and limit the number of authorisations

11.2.2 Decommissioning

The basic requirements for decommissioning are laid down in the Atomic Act, including the responsibility of the authorisation holder of the nuclear facility to ensure funding for decommissioning. The funding mechanism is based on the Act on Nuclear Fund. At different stages of a nuclear facility project, decommissioning plans at higher levels of detail are required, and the plans are also updated periodically during the operation. The collection of information important for decommissioning is also required during the operation of a facility.

Authorization for the decommissioning stage is issued by UJD SR as a nuclear safety authority. The authorization holder for the facilities currently under decommissioning, reactor A1 and the V1 reactor units, is the state owned company JAVYS a.s.. Decommissioning is authorized in stages; JAVYS a.s. received the license for the second stage of decommissioning of A-1 in 2009 while V1 reactors have recently received authorization for stage I. During the Mission the Review Team had the opportunity to visit A1 and to observe decommissioning and waste processing activities there.

CONCLUSION

UJD SR has established a comprehensive and exhaustive set of regulations and guides in the area of waste management and decommissioning that encourages waste minimisation. The developed regulations and guides are in line with relevant IAEA publications. A repository for short lived low level waste is operational. The IRRS Team suggested that the government should consider ensuring that the updated policy and strategy document regarding the back-end of spent fuel management will be implemented in a timely manner. A clarification regarding the division of responsibilities between the waste owner/generator and the waste management organisation should be provided in order to avoid ambiguities in the legal and regulatory framework. The IRSS Team also questioned the assessment of the period for recovery of the historical debt of funding.

11.2.3 Environmental monitoring for public protection

The Act on Public Health charges UVZ SR to carry out the evaluation of impacts on public health at national and regional level and describes the functionality of the environmental radiation monitoring network. Operation and data collection is to be made in cooperation with other national governmental bodies, each of them operating their own environmental monitoring network.

Environmental monitoring on-site and up to a radius of 20 km around the NPP is carried out by the operator of the plant according to the monitoring programme approved by UVZ SR. These measurements comprise verification of contamination of air and soil, as well as of liquid discharges. This monitoring programme is regularly updated. The results are sent quarterly to UVZ SR. Around the nuclear power plants UVZ SR installed TLD's that are changed every three months. Some routine sampling of water, soil and precipitation is performed according to the monitoring plan. Occasionally, additional samples for verification are taken and analysed by UVZ SR.

As well as these measurement networks, there are other institutions/authorities which have monitoring networks for external radiation and airborne contamination in the Slovak Republic. These are however not integrated in one system and UVZ SR only obtains the data from the others when they ask for it. Some networks such as from the Hydro-meteorological Institute and from the civil protection services are equipped with gamma dose rate meters, and results are available on-line. UVZ SR however has no online access to this information.

UVZ SR makes a yearly Article 35 report that is submitted to the European Commission. UVZ SR was submitted to two audits (2005 and 2009) in the context of this article 35 (Euratom). The conclusions stressed among other things the delay of informing the regulator of the data.

After the Fukushima accident, UVZ SR organised a meeting with representatives of Ministries and Institutes involved in environmental monitoring programmes, with the proposal to give UVZ SR direct access to all data and to improve the existing environmental monitoring system. These discussions have not resulted in concrete solutions so far.

Discharges of radioactive substances into the air and water are regulated by the Act 345/2006. A limit for the effective dose to the critical group of members of the public is set for each nuclear facility. This effective dose is calculated by the operator by using a calculation methodology approved by UVZ SR. Stack measurements for air borne releases are not available for UVZ SR in the on-line mode due to lack of adequate infrastructure.

In agreement with the Act 345/2006 clearance has to be licensed by UVZ SR. The clearance monitoring programme (sampling and measurement) of the operator has to be approved by UVZ SR. Data on released materials are quarterly reported by the operator to UVZ. Clearance values are based on IAEA TECDOC 855. The clearance levels will be revised after the publication of the new EU BSS.

For existing exposure situations, whatever their origin, apparently there is no strategy, nor reference values or action levels available in the present regulations. It is not clear therefore on what basis decisions will be made to intervene and to remediate chronic (existing) exposure situations.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 Para. 4.67 states that <i>“Radiation monitoring and environmental sampling and assessment shall be carried out in order to identify new hazards promptly and to refine the strategy for response.”</i>
(2)	BASIS: GS-R-2 Para. 5.28 states that <i>“Laboratories shall be designated to make the necessary arrangements to be able to perform appropriate and reliable analyses of environmental and biological samples and measurements of internal contamination for the purposes of an emergency response. It shall be ensured that these facilities would be operational under postulated emergency conditions.”</i>
R10	Recommendation: The Government should establish and operate a unified national radiation monitoring system and should ensure its results could be used by competent authorities in normal situations as well as during emergencies.
(1)	BASIS: WS-R-3, Req. 4.1. states that <i>“A national strategy shall be formulated to specify, prioritize and manage remediation situations and to ensure that an adequate legal and regulatory framework, supported where necessary by appropriate guidance material, is in place so that workers, the public and the environment are protected when remediation programmes are undertaken.”</i>
(2)	BASIS: GSR Part 3 Req. 49 states that <i>“The government shall ensure that provision is made for identifying those persons or organizations responsible for areas with residual radioactive material, for establishing and implementing remediation programmes and post-remediation control measures, if appropriate, and for putting in place an appropriate strategy for radioactive waste management”</i>
R11	Recommendation: The Government should establish the strategy, and update the reference levels, for decision making for chronic (existing) exposure situations and bring the strategy in line with GSR Part 3.

CONCLUSION

Environmental monitoring is performed by the operator as well as by different organisations or authorities. The monitoring networks however are not functioning as an integrated operating monitoring network. The IRRS Team therefore recommended that the operability of a National Radiation Monitoring Network should be re-evaluated to ensure availability of data to the relevant authorities. For chronic (existing) exposure situations, a strategy for decision making, including an update of the reference levels, should be developed.

12. REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT

This module brings together the information accumulated by the Team on Fukushima implications during the course of the mission and contains the views and conclusions of the team for each of the standard modules of the IRRS.

12.1. ACTIONS TAKEN BY THE REGULATORY BODY IN THE AFTERMATH OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT

A. IMMEDIATE ACTIONS TAKEN BY THE REGULATORY BODY

As UJD SR is the national contact point for international emergency preparedness early notification, right after the first notification on the accident the contact point of UJD SR was activated in the emergency response center. It remained active for about three month during working hours. Their duty was the receiving of the incoming information, compilation of reports for the UJD SR management and information of the general public through the website of UJD SR. More details on the emergency response activity of UJD SR are given in section 12.3 in connection with Module 10. (For the impact of the web-communication see subsection C below.)

Slovakia, being a member of the European Union acted in harmony with the EU initiatives in response to the TEPCO Fukushima Dai-ichi accident. The European countries and especially their organisation encompassing the nuclear safety regulatory and governmental representatives called ENSREG have decided to organize a targeted safety re-evaluation (“stress test”) of all European nuclear power plants.

In line with this initiative, on 31.03.2011 the Chairperson of UJD SR contacted the Director General of Slovenské Elektrárne (SE, operator of the nuclear power plants in Slovakia) in an administrative letter requesting an investigation on the possible responses of the Slovakian nuclear power plants to events similar to those in Fukushima. The initiating events to be considered were earthquake, flooding, and other possible extreme external conditions on site. The consequences to be taken into account were: loss of ultimate heat sink, station blackout and severe accidents resulting in core melt, including the evaluation of consequential effects like hydrogen production or degradation of spent fuel pool cooling.

As a follow-up of this administrative letter as well as of the final stress specification issued by ENSREG a meeting was held among the management of UJD SR and SE on 25.05.2011 in order to clarify details of the stress test and of the contents, format and timing of the stress test progress report to be submitted by SE to UJD SR. The scope and boundaries of as well as the NPP units to be included into the investigations were clarified.

In another administrative letter of 31.05.2011 the Chairperson of UJD SR forwarded to the DG of SE the ENSREG specification of the stress test, thus making the requirements unanimous. Technical details of the regulatory requirements were further clarified in a letter by the Chief Inspector of UJD SR to the Director of Operational Section of SE on 15.06.2011. Among others the timing of the stress test and of the reporting as well as the scope and structure of the preliminary and final reports were detailed along with some requirements in addition to those in the ENSREG specification (comparison of design basis and measured parameter values in view of the critical safety functions; possible configurations to ensure safety functions when the design configuration is challenged; analyse the occurrence of severe accident in two units at a time; severe accident management and in specific power supply recovery time necessary to avoid severe core damage; logistics requirements; necessary measures in short and long terms).

It is worth of noting that the fact that administrative letters and consultations were sufficient to reach agreement with the operator in the scope, contents and timing of the stress test and no formal regulatory decisions were needed demonstrates a trustful working relationship between the regulator and the licensee.

The licensee has completed and submitted to the regulatory body the requested final stress test report (for details therein see the next section) in due time. UJD SR prepared and submitted the National Report to ENSREG and took part in the peer review process both as reviewer and as reviewed party.

Parallel to requiring the completion of the stress test by the licensee, UJD SR ordered two studies from VUJE company related to the consequences of the accident. One study is dedicated to the general problem of “Analysis of the Fukushima accident” – a collection of the data available and the analysis of them. The other study is dealing with the specific problem of the “Possible solution for managing station blackout initiating events at VVER-440 units”.

B. TECHNICAL ISSUES CONSIDERED IN THE LIGHT OF THE FUKUSHIMA ACCIDENT

Before turning to the technical issues induced by the accident it is worth of mentioning that the Periodic Safety Review of both Slovak NPPs were closed not long before the accident (in 2008 for Bohunice and in 2011 for Mochovce). The license conditions for the next 10 years operation included requirements on seismic reevaluation of Mochovce, hardware modifications for severe accident management (e.g. pressure vessel external cooling). Following the accident the already decided new diesels are to be upgraded to be able to provide power for two units at a time. The severe accident management project was also re-evaluated after Fukushima. Accordingly a number of safety upgrading measures relevant from the point of view of the lessons learned from the accident have already been initiated as consequences of the PSR thus leaving less room for measures directly stemming from the TEPCO Fukushima Dai-ichi accident.

The technical issues related to the accident were then brought up by the stress test investigations. The stress test report deals with three main topics when discussing the possible effects of natural disasters (earthquakes, flooding and other extreme weather conditions), the possibilities of losing the primary safety functions (loss of ultimate heat sink and loss of electrical power) and the questions of severe accident management.

Prior to these technical issues two general statements deserve attention. The report states that the legislation reasonably covers also the issues raised by the accident and therefore included into the stress test. Nevertheless the revision process of the Atomic Act, which has been initiated shall take into consideration the issues that may emerge from the Fukushima lessons learned.

According to another statement the Configuration Matrix method, developed by the Slovak operator for the process of revising the possible answers of various technological configurations to incidental and accidental circumstances has also been adopted and applied by the IAEA in its review process. [In brief, the Configuration Matrix method is meant for the evaluation of the SSCs at the plant. The possible configurations of a system for given purposes (e.g. residual heat removal) are predefined. For each configuration the list of the included components is put into a matrix. Availability of every component is evaluated in various accidental circumstances. With a specific software tool it is easy to indicate what components and thus what configurations are lost in given accidental circumstances.]

For earthquakes the stress test report states that Slovakia is far less endangered by tectonic movements than Japan, accordingly the relevant requirements are less demanding. Nevertheless the design bases for both sites were re-evaluated prior to or as a consequence of the latest Periodic Safety Reviews resulting in an increased peak ground acceleration as compared to the original design. It is concluded that (following the corresponding upgrading) there is a margin even above the increased acceleration values. Nonetheless,

these margins shall be quantified in future investigations. Another measure to introduce in the future is the updating of the logistics arrangements related to extreme earthquakes.

Flooding of the NPP sites by surface or ground water sources can be excluded, the only concern may be the possible extreme meteorological conditions. The report states that proper sealing of the buildings and elevation of entrance doors shall provide adequate protection against flooding. Further measures are meant to perform renewed meteorological studies, updating of relevant documentations and purchase of portable pumps.

For other extreme meteorological condition the analysis shows that the resistance of the plants against them is acceptable even in case of the newly postulated events like tornadoes and combination of various extreme events. Among the possible further measures the report mentions finalization and updating of various safety analyses (meteorological, nuclear safety, impact assessment) and introduction of changes in the plant operating procedures.

In discussing the risk of loss of electrical power supply the report states that there are eight different power supply options available and that in all circumstances there is at least a 30 hours margin in providing power for core and/or spent fuel pool cooling. In order to further increase the robustness of the electrical power supply a great number of measures are initiated, including extension of the possibility of external power supply, optimization of emergency electricity consumption, use of portable generators.

In the subject of cooling it is found that if the loss of essential service water is not combined with station blackout, the water inventory of the plants is able to provide cooling for about 8 to 16 days, otherwise the results quoted at the loss of electrical power are relevant. In spite of this large margin further improving measures are considered: mobile and alternative coolant sources for steam generators and for the spent fuel pool.

For accident management, besides the aforementioned revision of the programme the stress test report notes that the case of a severe accident in two units at the same time should also be considered.

Requirement on the realization of the safety increasing measures identified in the stress test report shall be decided soon by the regulatory body as it is discussed in the next section.

C. OTHER ISSUES CONSIDERED IN THE LIGHT OF THE FUKUSHIMA ACCIDENT

Two more non-technical issues are to be mentioned in connection with the impact of the accident. First, UJD SR considers that the lessons learned and issues raised by the accident may have effect on the legislative background of nuclear safety in Slovakia. Therefore, in spite of the fact that the Atomic Act has recently been amended in line with requirements of the European Commission Nuclear Safety Directive and of WENRA, a revision of the regulations shall be performed as soon as the IAEA Nuclear Safety Action Plan provides its respective results and when the WENRA member states agree upon the common directions of modifications.

The other issue that is worth of mentioning is the impact of the accident on the public. As discussed above, UJD SR continuously updated its website in order to timely provide information on the events at the site of the accident. Strange enough, however, the public was not especially interested in the news of the accident, which can be seen from the number of visits to the UJD SR webpage at the same period of times of consecutive years. This number for the month March was about 30 thousands in 2010, about 15 thousands in 2011 and about 27 thousands in 2012. The respective numbers in April were 31, 21 and 21 thousand and for May 32, 15 and 18 thousand. Accordingly the general public was much more attracted by the UJD SR website in the previous and subsequent years than in the year of the accident. On the other hand the numbers also clearly reflect that the public interest markedly increased in April 2011 as compared to the previous month showing the immediate effect of the accident also in this respect.

Impact of the regulatory body on the public is also measured by polls once in every two years. The latest surveys were held in 2007, 2009 and 2011, respectively. The results of the polls show interesting trends. To the question that “How safe do you consider the Slovak NPPs?” (1 is the safest, 5 is the least safe), the average answers were 2.48, 2.17 and 2.28 for 2007, 2009 and 2011, respectively. Accordingly, although the trust in safety decreased from 2009 to 2011 (in all probability due to the TEPCO Fukushima Dai-ichi accident), it remained higher than in 2007. A more detailed analysis also shows that the numbers of the worst marks (i.e. 4 and 5) in 2011 were even lower than or about equal to those in 2009, which shows that the confidence of the public was not lost very much due to the accident. Parallel to that, UJD SR became more and more known as about 59% of the participants of the poll know about UJD SR in 2007, 69% in 2009 and 72% in 2011. In 2011 a direct question was posed related to the accident: “Has your opinion on the safety of Slovak nuclear plants changed due to Fukushima?” 70% of the answerers have not changed their opinion, the opinion of about 3% changed in favour of nuclear energy and 8% turned against it. These numbers again indicate that the effect of the accident on the general public was moderate.

CONCLUSION [1]

The Team considers that UJD SR has reacted on the TEPCO Fukushima Dai-ichi accident in time and in proportion to its importance from the point of view of the nuclear safety in Slovakia. The actions following the accident conform to the expectations of the public and of the international community. Lessons learned from the accident shall be incorporated in the future safety upgrading measures of both the regulator and the operator.

12.2. PLANS FOR UP-COMING ACTIONS TO FURTHER ADDRESS THE REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT

As a follow-up of the stress test review process a meeting was held between the managements of UJD SR and SE on 23.02.2012 in order to give information on the results of the ENSREG review process on one hand, and to determine the future steps on the other hand. In this meeting UJD SR required to obtain a concept of the implementation of corrective measures resulting from the stress test. The concept shall be based on several available sources (Slovak stress test reports, WANO investigations and reports, stress test results of other countries, etc.). No deadline was set for the submission of the concept since several on-going processes (like the finalization of the ENSREG report or the progress of the severe accident management program) may influence the final concept; nevertheless a draft of the concept has been submitted by the SE to UJD SR.

Acceptance of the concept by UJD SR shall be followed by a programme of implementation also to be accepted by UJD SR. Completion of the programme shall be ordered in a regulatory decision. According to UJD SR's concept such solutions should be sought that may be unified for all VVER reactors in the Slovak Republic and, possibly which are commonly used in other VVER units elsewhere.

Furthermore, the severe accident management programs set up by the latest periodic safety reviews of the plants were speeded up: the new deadline is 2013 for the EBO, and 2015 for the EMO.

The evaluation of the tasks resulting for UJD SR from the stress test shall be performed after the ENSREG has issued its final report. The evaluation will be followed by the compilation of a long term plan which needs to cover all issues arising from the stress test process in specific and from the lessons learned from the TEPCO Fukushima Dai-ichi accident in general.

CONCLUSION [2]

The Team concludes that UJD SR should summarize the lessons learned from the TEPCO Fukushima Dai-ichi accident that may be used to enhance nuclear safety in Slovakia. When doing so, UJD SR shall have the opportunity to revise its activity and functioning in order to take maximum advantage of the experience so gathered.

12.3. SIGNIFICANCE OF REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA ACCIDENT ACROSS REVIEWED AREAS

Note: The significance of Fukushima implications was considered as part of the review of each IRRS module. The review conclusions below and the plans presented by Slovakia to further address Fukushima issues in the coming years should be included in the scope of the follow-up IRRS mission to be invited by Slovakia.

Module 1: Responsibilities and Functions of the Government

Insufficient independence of the Japanese regulatory body as well as interface problems between the various authorities have been identified as primary areas of improvement in the governmental responsibilities and functions after the TEPCO Fukushima Dai-ichi accident. The Team considers as a good practice the regulatory independence in Slovakia. At the same time some issues, while not major ones, were identified as areas for improvement related to coordination and cooperation between various authorities. The relevant recommendations and suggestions are formulated in the Chapter 1 of this report.

UJD SR is an Authority established under the Slovak law; it is legally and functionally independent in the sense as defined by the IAEA Safety Requirements. It is the main regulatory body regarding nuclear safety in Slovakia. The duties and responsibilities of the various authorities having role in nuclear and radiation safety are clearly defined in legislation, and their cooperation in routine and emergency situations is basically assured, but could be improved as suggested in the Chapter 1 of this report.

The emergency preparedness aspects of the governmental functions and responsibilities are discussed in the part related to Module 10 below.

CONCLUSION [3]

The Team did not identify any element regarding the responsibilities and functions of the government which would raise particular concern in the light of the TEPCO Fukushima Dai-ichi accident. It was also noted that the Government required, and UJD SR is committed to address the relevant implications and lessons learnt from the accident within the framework of the EU stress test process.

Module 2: Global Nuclear Safety Regime

Slovakia is a contracting party to the Convention on Nuclear Safety (CNS), one of the major international conventions currently focused on evaluating and sharing lessons learned from the TEPCO Fukushima Dai-ichi accident. Slovakia has submitted its National Report and plans to the Extraordinary Meeting of the CNS in August 2012 devoted to lessons learnt from the accident. UJD SR is internationally active, participates in the committees and working groups of the IAEA, ENSREG, OECD NEA and WENRA. UJD SR actively follows the current international activities aimed at improving nuclear safety that should as a consequence of the TEPCO Fukushima Dai-ichi accident. UJD SR participated, via reviews and

comments, in the development of the IAEA Nuclear Safety Action Plan, which includes actions and expectations for IAEA and Member States to address nuclear safety concerns following the accident.

With regard operating experience feedback, UJD SR promptly after the accident required that its licensee (Slovenské Elektrárne) initiates actions to evaluate and address the initial lessons learned from the event.

CONCLUSION [4]

The Team concluded that the UJD SR is appropriately engaged in international activities related to the TEPCO Fukushima Dai-ichi accident, including the EU Stress Test, and has already taken initial actions to improve the safety of the Slovak NPPs.

Module 3: Responsibilities and Functions of the Regulatory Body

The Team found that the UJD SR has taken its actions with regard to the TEPCO Fukushima Dai-ichi accident within its responsibilities in the Slovakian government and without interference. It became clear that the UJD SR is able to exercise its authority and to take timely decisions in order to prevent any radiation or nuclear risk or in handling a nuclear emergency situation.

Since UJD SR did not identify anything in the Fukushima accident that would require immediate action in the Slovak NPPs, UJD SR decided to carry out its improvement programme within the framework of the EU Stress Tests.

UJD SR took effective actions to inform interested parties and the public in a transparent manner.

CONCLUSION [5]

The Team did not identify elements regarding the responsibilities and functions of the regulatory body which would raise particular concern in the light of the TEPCO Fukushima Dai-ichi accident. The Team considers that the communication to the public and interested parties was carried out in a due manner.

Module 4: Management System

UJD SR has not carried out a self-assessment or other review of its management system following the TEPCO Fukushima Dai-ichi accident. It has not, therefore, been able to satisfy itself that its management system is adequate, or establish whether there are opportunities for improvement.

CONCLUSION [6]

The Team concluded that UJD SR should review its management system to reflect on potential lessons learned from the TEPCO Fukushima Dai-ichi accident. The team recommended that such a review should be carried out.

Module 5: Authorisation

Presently the UJD SR authorisation process does not reflect the TEPCO Fukushima Dai-ichi accident. However, as in the near future they are going to complete an internal evolution - audit on the performance of the UJD SR staff during the period of the accident, some of the conclusions of this review may result in changes in the authorisation process.

CONCLUSION [7]

The Team concludes that the authorisation process of UJD SR has not been affected by the TEPCO Fukushima Dai-ichi accident. Further review of the lessons learned may result in change of this process.

Module 6: Review and Assessment

The requirements for covering the severe accidents, as well as the options and means to mitigate its consequences are well covered in the latest version of legal requirements. The UJD SR staff is well prepared for reviewing these scenarios.

In the regulations related to the periodic safety reviews of nuclear power plants, the re-evaluation of external hazards (natural or man-induced) is not listed explicitly in the list of topics to cover. We acknowledge, however, that at least some of these hazards (e.g. the earthquake) have been re-evaluated in the recent years independently from the periodic safety reviews. The inclusion of these re-evaluations in the systematic process of periodic safety reviews would contribute significantly to maintaining the robustness of the plants.

CONCLUSION [8]

The Team concluded that severe accident cases are well covered in the regulations and the staff of UJD SR is well prepared for reviewing these cases. The inclusion of the review of external hazards as a separate topic in the periodic safety review process could contribute to maintaining the robustness of the plants.

Module 7: Inspection

UJD SR hasn't made any modification of its annual programme. Neither new topics nor significant number of inspections had been formally added in the 2011 programme directly linked to TEPCO Fukushima Dai-ichi accident. A number of actions and observations were performed within the specific process of EU stress test. The results of these actions were captured in the national report from the stress test.

UJD SR considered in fact that the original programme already contained targeted inspections in relation with the TEPCO Fukushima Dai-ichi accident implication. In particular, UJD SR mentioned that the programme includes a series of inspections to check if the NPP's licensees had correctly implemented the recent modifications to reinforce the earthquake resistance of the building's structure. UJD SR informed the Team that targeted inspections related to the TEPCO Fukushima Dai-ichi accident implication would be planned and carried out when the modifications of the installations, following from the stress tests conclusions, are implemented

Nevertheless, it appears that some actions had been carried out by UJD SR to check the implementation of preventive measures taken by the licensees. As an example, the efficiency of the fire brigade to feed the safety system of steam generator with additional water had been tested during an exercise. Other actions consisted of the verification of the water-tightness of buildings. These actions were not formally integrated in the annual inspection programme.

CONCLUSION [9]

Although UJD SR has carried out specific actions to check the implementation of preventive measures taken by the licensees after the TEPCO Fukushima Dai-ichi accident , the IRRS Team considered that these inspections could have been included more formally in its annual inspection programme. The IRRS Team considered that UJD SR has regulatory processes that are sufficiently flexible to cope with the licensees’ response to lessons-learned from the TEPCO Fukushima Dai-ichi accident.

Module 8: Enforcement

UJD SR has established and implemented a graded enforcement policy within the legal framework for responding to non-compliances by the licensees. The process is commensurate with the seriousness of the non-compliance and could be potentially implemented in any case of non-conformance detected.

The observations made by the IRRS team and discussed in chapter 8 of the report demonstrate that UJD SR is fully capable to implement the enforcement process with independency and authority in case of any implication of the TEPCO Fukushima Dai-ichi accident.

CONCLUSION [10]

The Team concluded that UJD SR has an enforcement process which without any change is capable of dealing with the enforcement activity in any circumstances.

Module 9: Regulations and Guides

UJD SR has revised relevant regulations and guides in the light of the TEPCO Fukushima Dai-Ichi accident. Even before the accident the SAM implementation project (the prevention and mitigation of severe accident consequences) in Slovak NPPs had already been initiated in 2008. It was noted that this work already addressed most of the lessons learned from the accident.

Nevertheless, it is considered that the establishment of a concrete plan for revision of relevant UJD SR regulations and guides would promote more systematic feedback of the lessons learned as well as insights from foreign stress tests and international organisations. In addition, their technical guides should also be upgraded to include consideration of relevant results from international cooperative research on severe accidents.

CONCLUSION [11]

The Team concluded that the establishment of a concrete plan for revision of relevant UJD SR regulations and guides in the light of the TEPCO Fukushima Dai-Ichi accident promotes the systematic feedback of the lessons learned and research results from international experiences.

Module 10: Emergency Preparedness and Response

During the accident occurred in March 2011 at Fukushima-Daiichi NPP in Japan, the response of UJD SR ERC focused mainly on monitoring the situation and informing the public with respect to the accident status and prognosis of emergency evolution. After event occurrence, the UJD SR activated partially the emergency response organisation (only with the personnel of Division of Emergency Management, Informatics and Personnel Training). The national Crisis Centre was not activated, nevertheless the different authorities belonging to the national crisis management system responded according to their

roles in radiation emergency situations.

As national competent authority on nuclear safety, UJD SR has access to the USIE System of IAEA for notification and information exchange in radiation emergencies. Based on IAEA summaries, daily reports in Slovak language have been produced by the staff of Division of Emergency Management, Informatics and Personnel Training which is routinely involved in emergency preparedness activities. The daily reports have been published on the UJD SR web site and forwarded also to the Ministry of Interior for information and farther actions. The IAEA summaries in English language were transferred to the Public Health Authority for information and analysis regarding the radiation protection issues. In addition, links have been provided on the UJD SR web site to the web sites of other competent authorities. A link was always available for accessing the web site of Public Health Authority, where complementary information was published with respect to radiation protection topics, especially to protective actions for the population. The information and reports produced have been kept available for one year on UJD SR web site and afterwards archived on servers.

In the first few weeks after the TEPCO Fukushima Dai-ichi accident, daily interviews were organized, in which UJD SR leaders explained to media and public the situation, implications for the Slovak population in Japan, instructions to observe the local authorities decisions, implications for the population in Slovakia, aspects related to the nuclear safety of Slovak nuclear installations.

After the Ministerial Conference organized in Vienna in June 2011, when reviewing and analysing the lessons learned after Fukushima accident, UJD SR identified that the coordination at national level in between the different authorities might become a serious problem in case of severe nuclear emergency at one of the Slovak NPPs. Therefore, as a consequence, following a UJD SR proposal, the Government decided that a national large scale nuclear emergency response exercise shall be organized in October 2012, with the participation of all responsible organisations at local, county and national levels. The conducting and evaluation of this large scale exercise could be a good basis for future improvements of coordination and cooperation inside the national crisis management system.

The results of the stress tests performed in 2011 should be also incorporated and the identified gaps should be highlighted for future enhancement of emergency preparedness and response arrangements.

CONCLUSION [12]

The Team concludes that UJD SR responded promptly and in accordance with its specific duties as regulatory authority for nuclear safety. Further assessment of lessons learned from the accident should be performed to identify any further actions to be implemented.

Module 11: Occupational Radiation Protection in Nuclear Facilities, Radioactive Waste Management and Decommissioning, Public and Environmental Exposure Control

In the case of a general emergency at any one site, the local dosimetry services will become difficult to operate, although a large number of film badges are reserved at each site for emergency individual monitoring. However, mutual understandings are in place for each site to perform the monitoring of the emergency workers of the other site if required.

The IRRS Team was informed that the stress test covered only the spent fuel storage facilities (JAVYS a.s.) and as the oversight of these facilities is the responsibility of the nuclear safety department of UJD SR, it was dealt with by them. Other waste facilities were not included into the stress test.

During the interviews the IRRS Team was informed that the national radiation monitoring system is not operated in an effective and integrated way. Audits by the article 35 group of the European Commission had already revealed that the system was in the need for improvement and that data appeared to be unavailable to the Public Health Authority UVZ SR, being in charge of the network and for the collection and evaluation of monitoring data according to the Act on Public Health.

The Fukushima accident also pointed to the same weak points and after the accident UVZ SR took the initiative to organize a meeting with the other authorities involved. The IRRS Team was informed that, mainly due to the lack of funds, no improvement was made regarding the upgrading of the network and in setting up a structure enabling UVZ SR to quickly obtain data from the existing networks.

There is no strategy, nor reference levels available for evaluation of existing exposure situations in view of possible intervention or remediation.

As for the waste generated as the consequence of an accident, the team was informed that on-site areas are designated for storage of such radioactive wastes. However for large volumes of wastes that could be generated outside the premises of the operator, no evaluation was performed as yet with regard to storage of them.

CONCLUSION [13]

The Team recommended in Chapter 11 that the operability of a National Radiation Monitoring Network should be re-evaluated to ensure availability of data to the relevant authorities.

IRRS TEAM



APPENDIX I – LIST OF PARTICIPANTS

INTERNATIONAL EXPERTS		
1. STRITAR Andrej	Slovenian Nuclear Safety Administration (SNSA)	andrej.stritar@gov.si
2. MYKOLAICHUK Olena	State Nuclear Regulatory Inspectorate of Ukraine (SNRIU)	mykolaichuk@hq.snrc.gov.ua
3. ADORJAN Ferenc	Hungarian Atomic Energy Authority (HAEA)	adorjan@haea.gov.hu
4. ALLAIN Olivier	Autorité de Sûreté Nucléaire (ASN)	olivier.allain@asn.fr
5. BACIU Adriana Celestina	National Commission for Nuclear Activities Control (CNCAN)	adriana.baciu@cncan.ro
6. BLOMMAERT Walter	Federaal Agentschap vor Nucleaire Controle (FANC)	walter.blommaert@fanc.fgov.be
7. FURTEK Andrzej	National Atomic Energy Agency (PAA)	andrzej.furtek@paa.gov.pl
8. HEDBERG Bengt	Swedish Radiation Safety Authority (SSM)	bengt.hedberg@ssm.se
9. HUNT John	Comissão Nacional de Energia Nuclear - Instituto de Radioproteção e Dosimetria (CNEN/IRD)	john@ird.gov.br
10. NOVACKOVA Magdalena	State Office for Nuclear Safety (SUJB)	magdalena.novackova@sujb.cz
11. PALTEMAA Risto	Radiation and Nuclear Safety Authority (STUK)	risto.paltemaa@stuk.fi
12. REIERSEN Craig	Health & Safety Executive (HSE-ONR)	craig.reiersen@hse.gsi.gov.uk
13. SUNG Key Yong	Korea Institute of Nuclear Safety (KINS)	k109sky@kins.re.kr
IAEA STAFF MEMBERS		
1. JUBIN Jean-René	Division of Nuclear Installation Safety	j.jubin@iaea.org
2. MANSOUX Hilaire	Division of Radiation, Transport and Waste Safety	h.mansoux@iaea.org
3. LUX Ivan	Division of Nuclear Installation Safety	i.lux@iaea.org
4. KUTKOV Vladimir	Incident Emergency Centre	v.kutkov@iaea.org
5. UBANI Martyn O.	Division of Nuclear Installation Safety	m.ubani@iaea.org
6. DANI Mario	Division of Nuclear Installation Safety	m.dani@iaea.org
LIAISON OFFICER		
1. JANKO Karol	Nuclear Regulatory Authority of the Slovak Republic (UJD SR)	karol.janko@ujd.gov.sk

APPENDIX II – MISSION PROGRAMME

Sunday, 27 May 2012		Venue
14:00 – 18:00	Opening Team Meeting UJD SR: K. Janko	UJD SR, Bratislava
Monday, 28 May 2012		
09:30 – 12:30	Entrance meeting Opening Remarks – Slovakian officials and IRRS Team Leader Introduction of the IRRS Team and Counterparts Presentation of mission agenda Overview of the Slovakian regulatory approach and introduction of the IRRS modules – UJD SR and UVZ SR IRRS: IRRS Team UJD SR: UJD SR Team UVZ SR: UVZ SR Team Representatives of utility	UJD SR, Bratislava
13:30 – 17:00	Interviews and Discussions with Counterparts (Parallel discussions of all groups)	UJD SR Bratislava UVZ SR Bratislava
17:00 – 18:00	Daily IRRS Review Team Meeting UJD SR: K. Janko	UJD SR Bratislava
19:00 – 22:00	Social Event	Restaurant
Tuesday, 29 May 2012		
09:00 – 12:30	Interviews and Discussions with Counterparts - Parallel discussions of groups G1, G2, G4 (module 9), G5 - Parallel discussion of group G6	UJD SR Bratislava and UVZ SR Bratislava
13:30 – 17:00	Interviews and Discussions with Counterparts - Parallel discussions of groups G1, G2, G4 (module 9), G5 - Parallel discussion of group G6	UJD SR Bratislava UVZ SR Bratislava
08:00 – 09:00	Transportation from Bratislava to Trnava	
09:00 – 12:30	Interviews and Discussions with Counterparts - Parallel discussions of groups G3, G4 (module 7 and 8), G7, G8	UJD SR Trnava
13:30 – 17:00	Interviews and Discussions with Counterparts/ - Parallel discussions of groups G3, G4 (module 7 and 8), G7, G8	UJD SR Trnava

17:00 – 18:00	Transportation from Trnava to Bratislava	
18:00 – 19:00	Daily IRRS Review Team Meeting UJD SR: K. Janko	UJD SR Bratislava
19:00 –	IRRS Team Report Writing	Hotel Holiday Inn (UJD SR Bratislava)
Wednesday, 30 May 2012		
08:00 – 11:00	Exercise in UJD SR Emergency Response Center IRRS: IAEA (V. KUTKOV) UJD SR: ERC (J. Vaclav, J. Husarcek, L. Kubisova, J. Mazgut, P. Jurka, M. Zibricka, K. Carska, I. Randlisekova, M. Biharyova, S. Krajcir, D. Zemanova, M. Pirozekova, G. Spackova, B. Daru a V. Szabo)	UJD SR Bratislava, Emergency Response Center
11:15 – 12:30	- Discussion of groups G5 (A. BACIU) Group G2 – visit the archive – A. KLAMAROVA Presentation of Intranet DB – L. STEINBUBLOVA Discussion of groups G2	UJD SR Bratislava UJD SR Bratislava
13:30 – 17:00	Interviews and Discussions with Counterparts - Parallel discussions of groups G1 (O. MYKOLAICHUK), G2 and IAEA (V. KUTKOV)	UJD SR Bratislava
08:00 – 09:00	Transportation from Bratislava to Trnava	
09:00 – 12:30	Interviews and Discussions with Counterparts - Parallel discussions of groups G3, G7	UJD SR Trnava
14:00 – 17:00	Interviews and Discussions with Counterparts - Parallel discussions of group G3, G7	UJD SR Trnava
17:00 – 18:00	Transportation from Trnava to Bratislava	
06:00 – 08:00	Transportation from Bratislava to Mochovce site: G1, G4, G5, G6, G8	
08:00 – 11:00	Observation of emergency exercise in Mochovce NPP IRRS: G5 (A. BACIU) UJD SR: E. Metke, M. Bencat NPP: counterpart for exercise coordination	Mochovce NPP
08:00 – 12:30	Witnessing inspection in Mochovce NPP IRRS: G4 (O. ALLAIN, K. Y. SUNG) UJD SR: M. Tkac, J. Rovny NPP: counterpart for inspection coordination Witnessing inspection in Mochovce NPP	Mochovce NPP, Unit No.1 or No.2

	IRRS: G6 (J. HUNT) UVZ SR: D. Viktory NPP: counterpart for inspection coordination	
09:30 – 12:30	Walk-down, Interviews and Discussions with Counterparts IRRS: G1 (A. STRITAR), IAEA (I. LUX) UJD SR: H. Fraj, Chairperson of UJD SR NPP: counterpart for plant visit	Mochovce NPP, Unit No.3 or No.4
13:30 – 14:30	Meeting with the Mochovce NPP Management for about 1 hour IRRS: G4 (O. ALLAIN, K. Y. SUNG), G1 (A. STRITAR), IAEA (I. LUX) NPP: representative(s) of the Mochovce NPP	Mochovce NPP
13:30 – 16:00	Visit of environmental monitoring laboratory IRRS: G6 (J. HUNT), G5 (A. BACIU) UVZ SR: D. Viktory Laboratory: counterpart for visit coordination	Levice
14:30 – 16:00	Interviews and Discussions with Counterparts IRRS: G4 UJD SR: M. Bencat, M. Tkac, J. Rovny	Mochovce NPP
14:30 – 16:00	Transportation from Mochovce site to Bratislava (A. STRITAR, I. LUX)	
16:00 – 18:00	Transportation from Mochovce site/ Levice to Bratislava (G4, G5, G6)	
18:00 – 19:00	Daily IRRS Review Team Meeting IRRS Team UJD SR: K. Janko	UJD SR Bratislava
19:00 –	IRRS Team Report Writing	Hotel Holiday Inn (UJD SR Bratislava)
Thursday, 31 May 2012		
09:00 – 12:30	Interviews and Discussions with Counterparts - Parallel discussions of groups G1, G2, G4 (module 9), G5	UJD SR Bratislava
13:30 – 17:00	Interviews and Discussions with Counterparts - Parallel discussions of groups G1, G2, G4 (module 9), G5	UJD SR Bratislava
08:00 – 09:30	Transportation from Bratislava to Trnava and Bohunice site: G6 and G7	
09:30 – 12:30	Walk-down, Interviews and Discussions with Counterparts IRRS: G7 (B. HEDGERG, R. PALTEMAA, W. BLOMMAERT) UJD SR: D. Svorc, J. Homola JAVYS: counterpart for visit coordination Walk-down, Interviews and Discussions with Counterparts	JAVYS, Plc.

	IRRS: G6 (J. HUNT) UVZ SR: V. Jurina, E. Bedi JAVYS A1 NPP: counterpart for visit coordination	
13:30 – 14:30	Meeting with the JAVYS management for about 1 hour IRRS: G6 (if required), G7 JAVYS representative(s)	JAVYS, Plc.
14:30 – 16:30 13:30 – 16:30	Interviews and Discussions with Counterparts - Parallel discussions of group G7 UJD SR: D. Svorc, J. Homola - Parallel discussions of group G6 UVZ SR: V. Jurina, E. Bedi	JAVYS, Plc.
16:30 – 18:00	Transportation from Bohunice site to Trnava and Bratislava	
08:00 – 09:00	Transportation from Bratislava to Trnava	
09:00 – 12:30	Interviews and Discussions with Counterparts - Parallel discussions of groups G3, G4 (module 7 and 8), G8	UJD SR Trnava
13:30 – 17:00	Interviews and Discussions with Counterparts - Parallel discussion of groups G3, G4 (module 7 and 8), G8	UJD SR Trnava
17:00 – 18:00	Transportation from Trnava to Bratislava	
18:00 – 19:00	Daily IRRS Review Team Meeting UJD SR: K. Janko	UJD SR Bratislava
19:00 –	IRRS Team Report Writing	Hotel Holiday Inn (UJD SR Bratislava)
Friday, 01 June 2012		
09:00 – 11:00	Policy Discussions - Topic No.1: Public participation in the licensing - Topic No.2: Status of regulatory body in state administration system IRRS: IRRS Team UJD SR: Chairperson, K. Janko, M. Pospisil, and others	UJD SR Bratislava
09:00 – 12:30	Interviews and Discussions with Counterparts (if required)	UJD SR, UVZ SR
13:30 – 17:00	IRRS Team Report Writing	UJD SR Bratislava
18:00 – 19:00	Daily IRRS Review Team Meeting UJD SR: K. Janko	UJD SR Bratislava
19:00 –	IRRS Team Report Writing	Hotel Holiday Inn (UJD SR Bratislava)
	Delivery of group drafts to IRRS Admin Assistant for compilation	

Saturday, 02 June 2012		
09:00 – 12:30	IRRS Team Report Writing/ IRRS team discussion of draft mission report	UJD SR Bratislava
13:30 – 17:00	IRRS Team Report Writing/ IRRS team discussion of draft mission report	UJD SR Bratislava
17:00 –	IRRS Team Report Writing/ IRRS team discussion of draft mission report	Hotel Holiday Inn
Sunday, 03 June 2012		
11:00 – 17:00	Social Event	-
17:00 –	IRRS Team Report Writing (if required)	Hotel Holiday Inn (UJD SR Bratislava)
Monday, 04 June 2012		
09:00 – 12:30	IRRS team discussion of draft mission report	UJD SR Bratislava
13:30 – 17:00	IRRS team discussion of draft mission report, including counterparts	UJD SR Bratislava
	Visit of prime minister office IRRS: G1	Bratislava
End of day	Revised draft mission report provided to UJD SR	
Tuesday, 05 June 2012		
09:00 – 12:30	UJD SR and UVZ SR review and comments on the draft mission report	UJD SR, UVZ SR
12:30 – 13:30	Lunch break	
13:30 – 17:00	IRRS Team Report Writing/ IRRS team discussion of draft mission report	UJD SR Bratislava
Wednesday, 06 June 2012		
09:00 – 12:30	Discussion of UJD SR and UVZ SR comments (all IRRS Team) Discussion with the UJD SR and UVZ SR team	UJD SR Bratislava
13:30 –	Revised draft mission report to be given to UJD SR	UJD SR Bratislava
Thursday, 07 June 2012		
10:00 – 11:00	IRRS Exit Meeting	UJD SR Bratislava
11:30 – 12:00	Press release	UJD SR Bratislava
End of IRRS Mission		
12:00 – 13:00	Farewell	UJD SR Bratislava

APPENDIX III – SITE VISITS

SITE VISITS	
1.	Site Visit to MOCHOVCE
2.	Site Visit to BOHUNICE
3.	Site Visit to LEVICE (Environmental Monitoring Laboratory)

APPENDIX IV – LIST OF COUNTERPARTS

	IRRS EXPERTS	UJD SR Lead Counterpart	UJD SR Support Staff
1.	RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT		
	A. Stritar O. Mykolaichuk J.-R. Jubin	K. Janko	M. Pospisil M. Biharyova G. Spackova J. Husarcek D. Zemanova
2.	GLOBAL NUCLEAR SAFETY REGIME		
	A. Stritar O. Mykolaichuk J.-R. Jubin	K. Janko	M. Turner M. Pospisil M. Biharyova G. Spackova J. Husarcek D. Zemanova
3.	RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY		
	A. Stritar O. Mykolaichuk J.-R. Jubin	K. Janko	M. Turner M. Pospisil M. Biharyova G. Spackova J. Husarcek D. Zemanova
4.	MANAGEMENT SYSTEM OF THE REGULATORY BODY		
	C. Reiersen	J. Husarcek	K. Janko

	IRRS EXPERTS	UJD SR Lead Counterpart	UJD SR Support Staff
5.	AUTHORISATION		
	M. Novackova B. Hedberg W. Blommaert	O. Grof	T. Sedlak D. Vitkory (UVZ SR) E. Bedi (UVZ SR) V. Jurina (UVZ SR)A. Zavazanova M. Drahos
6.	REVIEW AND ASSESSMENT		
	F. Adorjan B. Hedberg W. Blommaert	O. Grof	T. Sedlak L. Kubisova D. Vitkory (UVZ SR) E. Bedi (UVZ SR) V. Jurina (UVZ SR) A. Zavazanova M. Drahos
7.	INSPECTION		
	O. Allain B. Hedberg W. Blommaert	J. Rovny	M. Pospisil M. Biharyova D. Vitkory (UVZ SR) E. Bedi (UVZ SR) V. Jurina (UVZ SR) A. Zavazanova M. Drahos
8.	ENFORCEMENT		
	O. Allain B. Hedberg W. Blommaert	J. Rovny	M. Pospisil M. Biharyova D. Vitkory (UVZ SR) E. Bedi (UVZ SR)

	IRRS EXPERTS	UJD SR Lead Counterpart	UJD SR Support Staff
			V. Jurina (UVZ SR) A. Zavazanova M. Drahos
9.	REGULATIONS AND GUIDES		
	K. Y. Sung B. Hedberg W. Blommaert	G. Spackova	D. Vitkory (UVZ SR) E. Bedi (UVZ SR) V. Jurina (UVZ SR) A. Zavazanova M. Drahos
10.	EMERGENCY PREPAREDNESS AND RESPONSE		
	A. Baci	E. Metke	A. Sokolikova D. Viktory(UVZ SR) V. Jurina (UVZ SR)
11.	OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR FACILITIES, RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL		
	J. Hunt B. Hedberg W. Blommaert	V. Jurina J. Homola	D. Vitkory (UVZ SR) E. Bedi (UVZ SR) C. Gaalova (UVZ SR) A. Zavazanova M. Drahos
12.	REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT		
	IRRS Team	P.Uhrik	J. Rovny

APPENDIX V – RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT	R1	Recommendation: The Government should adopt a document that sets out the national policy and strategy for safety, which should include provisions for assuring that competence for nuclear safety, is maintained.
	GP1	Good Practice: UJD SR is subordinated directly to the Government of the Slovak Republic, which is giving it a high degree of independence.
	S1	Suggestion: UJD SR should consider revising the regulatory framework in order to reduce the number of formal regulatory authorisations for licensee activities.
	R2	Recommendation: The Government should review and if necessary revise the legal framework and clarify the division of responsibilities among State Authorities in the area of nuclear and radiation safety, including emergency preparedness and response, in order to avoid overlaps or gaps in discharging regulatory functions and unduly burdening the licensees.
	R3	Recommendation: UJD SR should, together with the Ministry of Health, including UVZ SR, analyse potential areas for improvement in their cooperation, including planning and coordination of their activities, communication of information about their decisions and rational use of their resources. They should accordingly update their mutual arrangements and propose changes in the legislative framework to the Government.
2. GLOBAL NUCLEAR SAFETY REGIME	-	-

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	GP2	Good Practice: UJD SR has developed and implemented a structured approach to training and developing its staff based on the systematic approach to training.
	R4	Recommendation: UJD SR should develop provisions to assess the competence of its consultants and ensure systematically and formally that there is no potential conflict of interest.
	S2	Suggestion: UJD SR should consider ensuring that it retains sufficient intelligent customer capability to specify technical support contract content and to select, manage, understand and receive the work of its contractors.
	GP3	Good Practice: UJD SR demonstrates a comprehensive, well-formalized and yet flexible and efficiently implemented strategic approach to informing and consulting interested parties, including the public, about nuclear safety related issues, activities and events.
4. MANAGEMENT SYSTEM OF THE REGULATORY BODY	S3	Suggestion: UJD SR should consider establishing, and making prominent, a high level safety policy which places emphasis on safety as an overriding priority.
	S4	Suggestion: UJD SR should continue developing, and then implement a structured knowledge management process.
	S5	Suggestion: UJD SR should consider reviewing its strategy for record retention to ensure that all documents that may be relevant for extended periods are retained accordingly.
	S6	Suggestion: UJD SR should consider making assessment reports available on an electronic database.
	S7	Suggestion: UJD SR should consider conducting a regular review of its management system, and reflect at the earliest opportunity on potential lessons learned from the TEPCO Fukushima Dai-ichi accident.

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
5. AUTHORISATION	S8	Suggestion: UJD SR should consider recommending to the government a placing of strict limits on the timescales to respond to applications for authorisations is reviewed.
	S9	Suggestion: The Government should consider reviewing, and where necessary revising, regulations on the scope and extent of the involvement of environmental authorities in the nuclear safety authorization process.
6. REVIEW AND ASSESSMENT	GP4	Good Practice: UJD SR carries out its review and assessment activities in well controlled manner, based on established procedures. The personnel are well trained for the job, including the experienced and dedicated division equipped with various safety analysis tools to carry out control safety analyses.
	S10	Suggestion: UJD SR should consider defining more solid bases for setting the numerical acceptance criteria for design basis accidents and also should consider reviewing the stage in the licensing process of a new plant, where the acceptance criteria are approved.
7. INSPECTION	R5	Recommendation: UJD SR should stipulate in its general inspection procedure the maximum period between two inspections in the areas and programmes to be inspected.
	S11	Suggestion: UJD SR should consider extending the scope of its inspection programme to include, among others, inspections outside working hours and joint inspections with other authorities.
	GP5	Good Practice: Every 6 months UJD SR performs a systematic and formal assessment of inspection results to draw information from experience feedback and has launched a project for continual improvement of its inspection process.
	S12	Suggestion: UJD SR should consider improving the recording and storing of information and findings gathered when witnessing activities

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
		(with the licensee) at supplier's facilities, including when these facilities are located in foreign countries.
8. ENFORCEMENT	-	-
9. REGULATIONS AND GUIDES	S13	Suggestion: UJD SR should consider elaborating more detailed guidance for the licensees for operational events evaluation and investigation.
	S14	Suggestion: UJD SR should consider improving internal directives to better reflect the way in which it reviews international standards and translates them into national regulations and guides.
10. EMERGENCY PREPAREDNESS AND RESPONSE	R6	Recommendation: The Government should review and if necessary revise the national level of the assessment of all radiological threats in line with international requirements and for updating of the National emergency response plan to nuclear or radiological accidents.
	R7	Recommendation: The Government should make provisions to update, at national level, operational intervention levels (OILs) in line with international requirements.
	GP6	Good Practice: The detailed requirements existing in the current legislation for on-site and off-site planning provide for very efficient, reliable and harmonized arrangements at local level and therefore for prompt and coordinated response at the first level of intervention in case of emergency at nuclear facilities.
	S15	Suggestion: UJD SR should consider improving the system for management of exchange of information among groups in its emergency organisation.
	S16	Suggestion: The Government should consider making provisions for the use of UJD SR capabilities for conducting training and exercises as a basis for enhancing at national level the training and exercise programmes related to the management and response in radiation

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
		emergencies.
	GP7	Good practice: The extensive and regular training programs conducted by the UJD SR for its own interventional staff and emergency managers are recognized as a good practice.
11. OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR FACILITIES, RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL	R8	Recommendation: UVZ SR should put in place a human resource management program which assures that the staff can carry out the foreseen activities which attend the present and future expanded utilization of nuclear power in Slovakia so that specific knowledge and experience in the area of occupational radiation protection is preserved.
	S17	Suggestion: UVZ SR should consider planning the up-dating of the occupational radiation protection regulations in accordance with the ICRP 103 and subsequent ICRP recommendations and the GSR Part 3 interim version.
	S18	Suggestion: UVZ SR should consider reviewing the fixed and mobile equipment available for their inspection activities and occupational radiation protection at the nuclear facilities.
	S19	Suggestion: The Government should consider ensuring that the updated policy and strategy document regarding the back-end of spent fuel management will be implemented in a timely manner.
	S20	Suggestion: The Government, when assessing the period for recovery of the historical debt of funding, should take into account the risk involved in a long period of fund collection and consider that no undue burden is put on future generations.
	R9	Recommendation: The Government should review the current legal and regulatory framework and identify any need for clarification in regards to the division of responsibilities between the waste owner/generator and the waste management organisation.

AREA	R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
	GP8	Good Practice: UJD SR has established a comprehensive and exhaustive set of regulations and guidance in the area of waste management and decommissioning that encourages waste minimisation.
	R10	Recommendation: The Government should establish and operate a unified national radiation monitoring system and should ensure its results could be used by competent authorities in normal situations as well as during emergencies.
	R11	Recommendation: The Government should establish the strategy, and update the reference levels, for decision making for chronic (existing) exposure situations and bring the strategy in line with GSR Part 3.
12. REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICI ACCIDENT	-	-

**APPENDIX VI – CONCLUSIONS ON THE REGULATORY IMPLICATIONS OF THE TEPCO
FUKUSHIMA DAI-ICHI ACCIDENT**

AREA	NO.	CONCLUSION
ACTIONS TAKEN BY THE REGULATORY BODY IN THE AFTERMATH OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT	C 1	The Team considers that UJD SR has reacted on the TEPCO Fukushima Dai-ichi accident in time and in proportion to its importance from the point of view of the nuclear safety in Slovakia. The actions following the accident conform to the expectations of the public and of the international community. Lessons learned from the accident shall be incorporated in the future safety upgrading measures of both the regulator and the operator.
PLANS FOR UP-COMING ACTIONS TO FURTHER ADDRESS THE REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT	C 2	The Team concludes that UJD SR should summarize the lessons learned from the TEPCO Fukushima Dai-ichi accident that may be used to enhance nuclear safety in Slovakia. When doing so, UJD SR shall have the opportunity to revise its activity and functioning in order to take maximum advantage of the experience so gathered.
1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT	C 3	The Team did not identify any element regarding the responsibilities and functions of the government which would raise particular concern in the light of the TEPCO Fukushima Dai-ichi accident. It was also noted that the Government required, and UJD SR is committed to address the relevant implications and lessons learnt from the accident within the framework of the EU stress test process.
2. GLOBAL NUCLEAR SAFETY REGIME	C 4	The Team concluded that the UJD SR is appropriately engaged in international activities related to the TEPCO Fukushima Dai-ichi accident, including the EU Stress Test, and has already taken initial actions to improve the safety of the Slovak NPPs.

AREA	NO.	CONCLUSION
3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	C 5	The Team did not identify elements regarding the responsibilities and functions of the regulatory body which would raise particular concern in the light of the TEPCO Fukushima Dai-ichi accident. The Team considers that the communication to the public and interested parties was carried out in a due manner.
4. MANAGMENT SYSTEM OF THE REGULATRY BODY	C 6	The Team concluded that UJD SR should review its management system to reflect on potential lessons learned from the TEPCO Fukushima Dai-ichi accident. The team recommended that such a review should be carried out.
4. AUTHORISATION	C 7	The Team concludes that the authorisation process of UJD SR has not been affected by the TEPCO Fukushima Dai-ichi accident. Further review of the lessons learned may result in change of this process.
5. REVIEW AND ASSESSMENT	C 8	The Team concluded that severe accident cases are well covered in the regulations and the staff of UJD SR is well prepared for reviewing these cases. The inclusion of the review of external hazards as a separate topic in the periodic safety review process could contribute to maintaining the robustness of the plants.
6. INSPECTION	C 9	Although UJD SR has carried out specific actions to check the implementation of preventive measures taken by the licensees after the TEPCO Fukushima Dai-ichi accident , the IRRS Team considered that these inspections could have been included more formally in its annual inspection programme. The IRRS Team considered that UJD SR has regulatory processes that are sufficiently flexible to cope with the licensees' response to lessons-learned from the TEPCO Fukushima Dai-ichi accident.

AREA	NO.	CONCLUSION
7. ENFORCEMENT	C 10	The Team concluded that UJD SR has an enforcement process which without any change is capable of dealing with the enforcement activity in any circumstances.
8. REGULATIONS AND GUIDES	C 11	The Team concluded that the establishment of a concrete plan for revision of relevant UJD SR regulations and guides in the light of the TEPCO Fukushima Dai-Ichi accident promotes the systematic feedback of the lessons learned and research results from international experiences.
9. EMERGENCY PREPAREDNESS AND RESPONSE	C 12	The Team concludes that UJD SR responded promptly and in accordance with its specific duties as regulatory authority for nuclear safety. Further assessment of lessons learned from the accident should be performed to identify any further actions to be implemented.
10. OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR FACILITIES, RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING, PUBLIC AND ENVIRONMENTAL EXPOSURE CONTROL	C 13	The Team recommended in Chapter 11 that the operability of a National Radiation Monitoring Network should be re-evaluated to ensure availability of data to the relevant authorities.

APPENDIX VII – UJD SR REFERENCE MATERIAL USED FOR THE REVIEW

[1]	IRRS Questions and Answers:
	<ul style="list-style-type: none"> - <i>Module 1: Responsibilities and Functions of the Government</i> - <i>Module 2: Global Nuclear Safety Regime</i> - <i>Module 3: Responsibilities and functions of the Regulatory Body</i> - <i>Module 4: Management System of the Regulatory Body</i> - <i>Module 5: Authorisation</i> - <i>Module 6: Review and Assessment</i> - <i>Module 7: Inspection</i> - <i>Module 8: Enforcement</i> - <i>Module 9: Regulations and Guides</i> - <i>Module 10: Emergency Preparedness and Response</i> - <i>Module 11: Occupational Radiation Protection in Nuclear Facilities, Radioactive Waste Management and Decommissioning, Public and Environmental Exposure Control</i> - <i>Module 12: Regulatory Implications of the Tepco Fukushima Dai-Ichi Accident</i>
[2]	Relevant Documentation
UJD SR Internal Documents	
	<ol style="list-style-type: none"> 1. <i>UJD SR Directive on Documentation assessment</i> 2. <i>UJD SR Directive on Inspection activities</i> 3. <i>UJD SR Statute</i> 4. <i>UJD SR Quality manual</i> 5. <i>UJD SR Directive on issue decisions</i>
EU Directive	
	<ol style="list-style-type: none"> 1. <i>EU Directive 2009_71 Nuclear safety</i>
Legislation	
	<ol style="list-style-type: none"> 1. <i>Act 71_1967 Administrative proceedings act</i> 2. <i>Act 350_2011 Atomic act as amended</i> 3. <i>Act 355_2007 Protection, support and development of public health</i> 4. <i>Act 408_2008 Atomic act as amended</i> 5. <i>Act 541_2004 Atomic act</i> 6. <i>Governmental resolution 345_2006 Requirements for protecting health</i> 7. <i>Regulation 46_2006</i> 8. <i>Regulation 47_2006</i> 9. <i>Regulation 48_2006</i> 10. <i>Regulation 49_2006 PSR (old)</i> 11. <i>Regulation 50_2006 Nuclear safety requirements (old)</i> 12. <i>Regulation 51_2006</i> 13. <i>Regulation 52_2006</i> 14. <i>Regulation 53_2006</i> 15. <i>Regulation 54_2006</i> 16. <i>Regulation 55_2006</i> 17. <i>Regulation 56_2006 Management system (old)</i> 18. <i>Regulation 57_2006</i> 19. <i>Regulation 58_2006</i> 20. <i>Regulation 430_2011 Nuclear safety requirements (new)</i> 21. <i>Regulation 431_2011 Quality management system (new)</i>

Reports
<ol style="list-style-type: none"> 1. <i>SK National report_NS_2010</i> 2. <i>SK National report_RAW_2008</i> 3. <i>UJD SR Annual report_2010</i> 4. <i>SK National report on stress test on NPPs_2011</i> 5. <i>SK National report_RAW_2011</i>
Self-Assessment of the National Regulatory Infrastructure for Nuclear Safety
<ol style="list-style-type: none"> 1. <i>SAT_report_SK</i>
Summary of the legislative responses to the IAEA requirements (published 2 May 2012)
<ol style="list-style-type: none"> 1. <i>Response to GSR Part 1</i>
Annexes to Module 10
<ol style="list-style-type: none"> 1. <i>EP Annex II</i> 2. <i>EP Annex XIII</i> 3. <i>EP Annex XIII_XIII13</i> 4. <i>EP Annex XIII2_XIII21</i>
Additional documentation to Module 11
<ol style="list-style-type: none"> 1. <i>General Responsibilities of Registrants Licensees and Employers answers</i> 2. <i>General Responsibilities of Workers</i> 3. <i>Legal Regulatory Framework</i> 4. <i>Monitoring Programmes_Technical Services</i> 5. <i>Requirements for Radiation Protection Programmes - Answers</i>
Additional documentation to Module 12
<ol style="list-style-type: none"> 1. <i>05 UJD T3 Accident management measures</i> 2. <i>Regulatory Implication of the Fukushima Accident</i> 3. <i>SK National report on stress tests for NPPs 2011</i>
Policy Issue 1: Public involvement in Licensing
<ol style="list-style-type: none"> 1. <i>Scope and forms of the public participation in the licensing process of peaceful use of nuclear energy</i>
Policy Issue 2: Status of the Regulatory Body in the State Administration System
<ol style="list-style-type: none"> 1. <i>Status of a regulatory body in the state administration system</i>

APPENDIX VIII – IAEA REFERENCE MATERIAL USED FOR THE REVIEW

1. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1, No. GSR Part 1, IAEA, Vienna (2010).
2. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Management System for Facilities and Activities. Safety Requirement Series No. GS-R-3, IAEA, Vienna (2006).
3. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Preparedness and Response for Nuclear and Radiological Emergencies, Safety Requirement Series No. GS-R-2, IAEA, Vienna (2002).
4. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, , General Safety Requirements Part 3, No. GSR Part 3 (Interim Edition), IAEA, Vienna (2011).
5. **INTERNATIONAL ATOMIC ENERGY AGENCY** - International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, IAEA Safety Series No. 115, Vienna (1996).
6. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Safety assessment for facilities and activities, General Safety Requirements Part 4, No. GSR Part 4, IAEA, Vienna (2009)
7. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Predisposal Management of Radioactive Waste, General Safety Requirement Part 5, No. GSR Part 5, IAEA, Vienna (2009).
8. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Decommissioning of Facilities Using Radioactive Material Safety, , Safety Requirement Series No. WS-R-5, IAEA, Vienna (2006).
9. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Safety of Nuclear Power Plants: Design, Specific Safety Requirements No. SSR-2/1, IAEA, Vienna (2012).
10. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Safety of Nuclear Power Plants: Commissioning and Operation, Specific Safety Requirements Series No. SSR-2/2, IAEA, Vienna (2011).
11. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Site Evaluation for Nuclear Installations, Safety Requirement Series No. NS-R-3, IAEA, Vienna (2003).
12. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Safety of Nuclear Fuel Cycle Facilities, Safety Requirement Series No. NS-R-5, IAEA, Vienna (2008)
13. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Disposal of Radioactive Waste, Specific Safety Requirements No. SSR-5, IAEA, Vienna (2011)
14. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Organisation and Staffing of the Regulatory Body for Nuclear Facilities, Safety Guide Series No. GS-G-1.1, IAEA, Vienna (2002).
15. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Review and Assessment of Nuclear Facilities by the Regulatory Body, Safety Guide Series No. GS-G-1.2, IAEA, Vienna (2002).
16. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body, Safety Guide Series No. GS-G-1.3, IAEA, Vienna (2002).
17. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Documentation Used in Regulating Nuclear Facilities, Safety Guide Series No. GS-G-1.4, IAEA, Vienna (2002).

18. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide Series No. GS-G-2.1, IAEA, Vienna (2007)
19. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Criteria for use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide Series No. GSG-2, IAEA, Vienna 2011)
20. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Commissioning for Nuclear Power Plants, Safety Guide Series No. NS-G-2.9, IAEA, Vienna (2003)
21. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Periodic Safety Review of Nuclear Power Plants, Safety Guide Series No. NS-G-2.10, IAEA, Vienna (2003)
22. **INTERNATIONAL ATOMIC ENERGY AGENCY** - A System for the Feedback of Experience from Events in Nuclear Installations, Safety Guide Series No. NS-G-2.11, IAEA, Vienna (2006)
23. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Occupational Radiation Protection, Safety Guide Series No. RS-G-1.1, IAEA, Vienna (1999)
24. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Assessment of Occupational Exposure Due to Intakes of Radionuclides, Safety Guide Series No. RS-G-1.2, IAEA, Vienna (1999)
25. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Assessment of Occupational Exposure Due to External Sources of Radiation, Safety Guide Series No. RS-G-1.3, IAEA, Vienna (1999)
26. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Environmental and Source Monitoring for Purposes of Radiation Protection, Safety Guide Series No. RS-G-1.8, IAEA, Vienna (2005)
27. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Deterministic Safety Analysis for Nuclear Power Plants, Specific Safety Guides Series No. SSG-2, IAEA, Vienna (2010)
28. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide Series No. SSG-3, IAEA, Vienna (2010)
29. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide Series No. SSG-4, IAEA, Vienna (2010)
30. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Licensing Process for Nuclear Installations, Specific Safety Guide Series No. SSG-12, IAEA, Vienna (2010)
31. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Classification of Radioactive Waste, General Safety Guide No. GSG-1, IAEA, Vienna (2009)

32. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Decommissioning of Nuclear Power Plants and Research Reactors, Safety Guide Series No.WS-G-2.1, IAEA, Vienna (1999)
33. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Regulatory Control of Radioactive Discharges to the Environment, Safety Guide Series No.WS-G-2.3, IAEA, Vienna (2000)
34. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Decommissioning of Nuclear Fuel Cycle Facilities, Safety Guide Series No.WS-G-2.4, IAEA, Vienna (2001)
35. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Predisposal Management of Low and Intermediate Level Radioactive Waste, Safety Guide Series No.WS-G-2.5, IAEA, Vienna (2003)
36. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Predisposal Management of High Level Radioactive Waste, Safety Guide Series No.WS-G-2.6, IAEA, Vienna (2003)
37. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Safety Assessment for the Decommissioning of Facilities Using Radioactive Material, Safety Guide Series No.WS-G-5.2, IAEA, Vienna (2009)
38. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Storage of Radioactive Waste, Safety Guide Series No. WS-G-6.1, IAEA, Vienna (2006)

APPENDIX IX – ORGANISATIONAL CHART

ORGANIZATIONAL CHART
ÚJD SR

