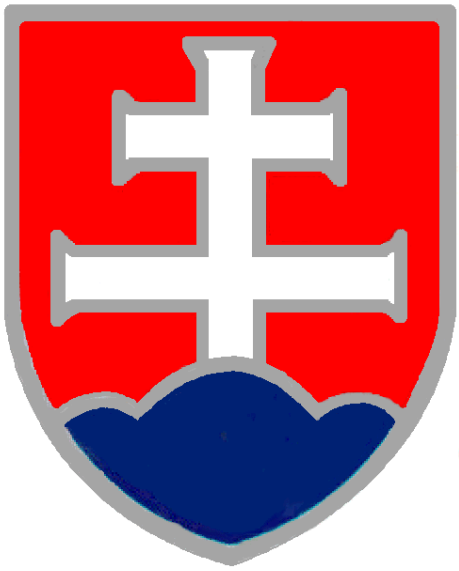
ANSWERS TO QUESTIONS

ON

NATIONAL REPORT OF

THE SLOVAK REPUBLIC



COMPILED ACCORDING TO THE TERMS OF THE CONVENTION ON NUCLEAR SAFETY

BRATISLAVA
APRIL 2011

ARGENTINA

Convention on Nuclear Safety
Questions Posted By Argentina To Slovakia in 2011

Q.No	Country	Article	Ref. in National Report
6	Slovakia	Article 6	Section 2.2.3.2 - page 27

Question/ Comment The report indicates that preparation for V-2 PSR began in 2004 in frame of regulation No. 121/2003 (Article 6 - Section 2.2.3.2 - page 27). Please, could you detail the regulation No. 121/2003 content?

Answer The regulation was replaced by regulation 49/2006 Coll. (www.ujd.gov.sk).

Q.No	Country	Article	Ref. in National Report
7	Slovakia	Article 6	Section 2.2.3.2, pages 27/28

Question/ Comment Regarding the system established for the realizations of provisions mentioned in Article 6 - section 2.2.3.2, pages 27/28, Could you give more details about the criteria used for control the realization of provisions/correction measures?

Answer Time schedule for implementation of CAs was based on (ordered by priority)

1. Safety significance
2. Type of criteria (1. priority - national legislation and WENRA requirements, 2. priority - international documents and requirements)
3. Implementation by plant staff or contractor
4. Preliminary estimation of finance and source difficulty
5. Status of comparable issue abroad mainly at VVER 440 types

<u>Safety significance ranking:</u>
Identified safety issues were grouped into 5 groups according to their influence on defence in depth.
The used method and criteria were derived from defence in depth concept. In this approach the safety of a nuclear power plant was considered to depend on:

- (1) The postulated initiating events (PIEs) and hazards being adequately identified and analyzed (and included within the design basis) (Hardware measure);
- (2) The design being sufficiently robust and including multiple physical barriers to the release of radioactivity (Hardware measure);
- (3) The design and operation of the plant including multiple levels of defence against abnormal conditions (combination of Procedural and Hardware measure);
- (4) The staff training and operational performance matching best practice (Procedural measure);
- (5) The safety culture principles are followed, demonstrated by the attitude of the management and staff, promoting safe operation (Procedural measure).

Each safety issue was assessed against the previous 5 requirements, and in the case of requirements (2) and (3), that this assessment considers the impact of the issue on each 'barrier' and each 'level of defence' individually.

Below there is table based upon these 5 assessment criteria, provides a methodology for ranking the safety issues into 'low', 'medium', and 'high' significance to safety. If more than one objective criterion was applicable to the issue, the highest safety significance ranking was assigned to the issue.

Ref	Applicable criteria for non-compliance assessment	Assigned Safety significance		
		A - Low	B - Medium	C - High
1	Impact on plant risk of a new PIE or of increased frequency of a PIE	**Small** (negligible) impact	**Significant**	**Major**
2	Impact on a physical barrier to the release of radioactivity	Barrier is **Affected**, but integrity remains maintained	Barrier function is **Degraded** (integrity is jeopardized)	Barrier function is **Seriously degraded** or completely violated
3	Impact on one or more levels of defence in depth	**Affected** but functional	**Significantly affected** (functionality is jeopardized)	**Lost** (non-functional)
4	Level of staff training and operational performance	**Improvement needed** (non-compliant against recommendations)	**Inadequate** (non-compliant against recommendations)	**Unacceptable** (violation of legislation)
5	Level of safety culture	**Improvement needed**	**Inadequate**	**Unacceptable**

Q.No	Country	Article	Ref. in National Report
8	Slovakia	Article 6	Section 2.3.1 - pag.30

Question/ Comment The report says that changes in the relevant documentation were performed (Article 6 - Section 2.3.1 - pag.30). What were the criteria used by UJD for approving such changes?

Answer All criteria are set in the Slovak national legislation, i.e. the atomic act and the set of 13 regulations.

Q.No	Country	Article	Ref. in National Report
28	Slovakia	Article 10	Section 4.2.3 – pages 68 to 70

Question/ Comment What are the regulatory requirements for the Special Professional Competence Licenses renewal?

Answer Regulatory body has following requirements for the Special Professional Competence Licenses renewal:
1. health and mental responsibility,
2. periodical training.

Q.No	Country	Article	Ref. in National Report
39	Slovakia	Article 12	Section 4.3.4 – page 78

Question/ Comment What are the qualification required for the regulators that witness the selected staff exercises on representative full scope simulator?

Answer UJD members of executive commission have practices from NPP operation (on control room) or in preparation of operation procedures. The main role of UJD is to control and examination of selected staff members.

Q.No	Country	Article	Ref. in National Report
71	Slovakia	Article 19.1	Section 5.3.2 – page 115

Question/ Comment What are the L&C documentation developed in regard of decommissioning and gradual fuel removal on both V-1 units of Bohunice NPP? (Article 19.i - Section 5.3.2 – page 115).

Answer The English text of the national report is not correct. The L&C documentation it was developed for the shut down (Mode 7 and 8).

Mode 7 is standard operational mode of a V1 NPP reactor unit according to original design, used in the past for reactor pressure vessel inspection. Typical character of this mode is displacement of all nuclear fuel assemblies from reactor core to the spent fuel pool. Heat sink had been provided by relevant safety systems designed specially for this purpose. During pre-decommissiong phase Mode 7 is used for cool down of the nuclear fuel for certain time to reach parameters suitable for transport of nuclear fuel to the interim spent fuel storage.

Mode 8 is characterised by total defuelling of reactor unit, i.e. all nuclear fuel is transported outside from reactor technology and transported to the interim spent fuel storage. This operational mode is applied for pre-decommissioning purposes.
14 02 2009 - V1 NPP Unit 1 in Mode 8 (defuelling of the reactor unit 1)
02 12 2009 - 21.01.2011 - V1 NPP Unit 2 in Mode 7 (nuclear fuel cool down)
21 01 2011 - V1 NPP Unit 2 in 8 (defuelling of the reactor unit 2).

CZECH REPUBLIC

Convention on Nuclear Safety
Questions Posted By Czech Republic To Slovakia in 2011

Q.No	Country	Article	Ref. in National Report
43	Slovakia	Article 13	Section 4.4/Page 79

Question/ Comment	How does the national legislation (the Atomic Act and its decrees) address the requirement to establish an integrated management system for nuclear operators?
Answer	The main legislative act in the sphere of nuclear energy is the law No. 541/2004 Coll. on peaceful use of nuclear energy (Atomic act) and on alternations and amendments to some acts. Integrated management system is in § 25 called limited to “quality assurance”. The amendment to the Atomic Act which is in legislative process these days is different and changes the whole § 25. This provision will work out the management system and the corresponding regulation will be adjusted as well.

FRANCE

Convention on Nuclear Safety
Questions Posted To Slovakia By France in 2011

Q.No	Country	Article	Ref. in National Report
9	France	Article 6	§ 2.1.1 - p.18 to p.28

Question/ Comment

The Slovak Republic report is rather rich nevertheless some other details are missing for a good comprehension of the regulatory safety situation
a) "For instance, could Slovak Republic give more information about:
- the operation ""modes"" (mode 7, mode 8) p. 18?
- main recommendations and measures taken further to the WANO mission in 2007, p.21?
b) - the role of the Risk monitor indications: are they mandatory? What is the respective role of Risk Monitor and Technical Specifications, p.23?
c) - the main corrective measures taken further to the PSR and the periodicity to carry out a periodic safety review, p. 27-28?
d) - what does a secured service mean for spare parts supply, p.28?"

Answer

a) **Mode 7** is standard operational mode of a V1 NPP reactor unit according to original design, used in the past for reactor pressure vessel inspection. Typical character of this mode is displacement of all nuclear fuel assemblies from reactor core to the spent fuel pool. Heat sink had been provided by relevant safety systems designed specially for this purpose.
During pre-decommissioning phase Mode 7 is used for cool down of the nuclear fuel for certain time to reach parameters suitable for transport of nuclear fuel to the interim spent fuel storage.
Mode 8 is characterised by total defuelling of reactor unit, i.e. all nuclear fuel is transported outside from reactor technology and transported to the interim spent fuel storage. This operational mode is applied for pre-decommissioning purposes.
14 02 2009 - V1 NPP Unit 1 in Mode 8 (defuelling of the reactor unit 1)
02 12 2009 - 21.01.2011 - V1 NPP Unit 2 in Mode 7 (nuclear fuel cool down)
21 01 2011 - V1 NPP Unit 2 in 8 (defuelling of the reactor unit 2).

The main recommendations from WANO mission in 2007:

1. **In some cases, administrative controls such as policies, procedures and schedules, implemented for activities affecting safe and reliable plant operation have got a potential for improvement.** The main weaknesses observed concentrate in three subsequent areas: a consistency and proper communication of the company and the power plant mission and policies; a clear understanding of safety in context of the economical and other company activities; an assertive enforcement of practical safety-related techniques at the plant workplaces.
2. **Managers do not always make use of all their means and opportunities to reinforce their expectations, motivate and monitor their performance during interaction with the staff to achieve safe and reliable station operation.** Industrial safety issues, the plant checking system, the management communication and the personal management commitment as well as a personal behavior paradigm are the main issues identified.

3. **Measurable criteria for performance indicators (measures) are not always properly established and used to identify areas for performance improvement.** The absence of properly established measurable criteria for performance indicators could make it impossible to evaluate the actual performance in order to identify and correct areas needing improvement.
4. **Sometimes the operations staff pretends not to pay attention to small deviations.** The operations department has developed a package of procedures, rules and expectations to improve general plant status and operation. However, there were found several events when the attention of the operations staff was not enough sufficient.
5. **Deficient and incomplete operations documentation may sometimes result in the decrease of the plant reliability.** The operations procedures do not always contain enough information. The operations staff sometimes does not use them properly. The operations procedures at work places do not contain information about the last revision.
6. **Some deficiency exists in mechanism of the plant configuration control as well as inaccuracy in work performance control that may result in potential events.** The configuration control of the plant was established but it was incomplete. Sometimes important components are not properly tagged. An independent verification of the component status is not fully implemented. The control of work orders may be improved.
7. **The plant has not implemented enough efforts to conduct maintenance activities in an effective and efficient manner by using the controlled documents, instructions, drawings and all maintenance-related documents, in order to avoid human mistakes and occurrences.** The plant has got a policy for conducting maintenance activities and associated documents, rules and practices that shall support it. However, there were found several drawbacks related to the usage of controlled procedures, instructions, and drawings. Some documents do not provide an appropriate instruction and details, they are not enough technically accurate, and are not consistently used to perform maintenance in a safe, correct, and efficient manner in order to avoid human performance mistakes. Additionally, the maintenance personnel do not always identify procedure problems.
8. **In some cases the plant does not use effective and appropriate maintenance practices, in particular, preparatory activities for maintenance in order to support safe and reliable plant operation.** The plant has got a policy for conducting maintenance activities and associated documents, rules and practices that shall support it. However, there were found several deficient maintenance practices when appropriate tools and equipment were not used whereas not-needed tools were taken in the kit. Some tools were used incorrectly, and the violation of industrial and radiological rules was observed.
9. **The plant does not pay enough attention to the implementation of control and protective measures at work places where maintenance activities are conducted with the aim to prevent foreign materials getting into equipment and affecting its performance.** The plant has established and implemented the policy of Foreign Materials Exclusion (FME) at the places where this may occur. However, several cases were

found where the FME policy was not fully implemented that could lead to the potential failure of equipment performance and, in some cases, to the ingress into the secondary circuit that could cause SG tubes damage, and into the primary circuit that could affect the fuel performance.

10. **On several occasions, operational transients or unexpected system actuations have occurred during initial operations of equipment that has been modified. These events occurred because of human performance errors leading to improper equipment operation or installation.**
11. **Radiation protection rules concerning the prevention of the contamination are not always in accordance with ALARA.** The plant already had contamination-related events and there exists a potential of such events in future.
12. **Some deficiencies in investigation of events present a potential risk of similar events recurrence.** Root causes of important or repetitive problems as well as adverse trends from non-consequential events are not always properly and timely identified, and corrective actions do not always address fundamental causes of problems, and sometimes they are not developed.
13. **Sometimes the plant operating experience feedback program does not ensure that corrective actions are defined or implemented in a timely manner and address fundamental causes of problems.** Specified corrective actions are not always tracked up to the completion, and operating experience investigation results that decrease human factor are not consistently used in the day-to-day operation.
14. **Some problems were identified in accuracy of chemistry and radiochemistry measurement.** The potential consequence is that instruments may be insufficiently sensitive to detect a developing operational problem.
15. **Although the plant has got a procedure that covers safe practices required for storage, segregation or identification of chemicals, the operational and warehouse staff does not always follow the procedure during manipulation with chemicals as well as the information about chemical hazards.**
16. **To ensure the required quality of the training process, there is a need to pay more attention to providing resources for the personnel training system needed to accomplish the established tasks and duties.** The resources of the training department are not adequate for tasks and duties allocated to this department. There is a lack of supervision of the overall training process at the site. Resources needed to ensure the support from external contractors are not provided in a timely manner.
17. **The analysis of training needs and the evaluation of training efficiency are not fully ensured the quality of the training process. Inadequate teaching skills of instructors do not always guarantee the quality of training.** Training performance indicators are not in place. Training needs are defined on the unsystematic base and there is no established mechanism of the training needs evaluation. Training materials are not maintained in terms of SAT requirements. There is a practice to use unapproved training materials during training. There is a

lack of evaluation of recurring problems addressed to training. A mechanism of maintaining instructional skills of the plant personnel involved in training is not implemented. Instructors do not properly prepare themselves for training lessons.

The Action plan for resolving all recommendation was adopted and implemented in Bohunice plant. The Action plant consist of 92 tasks and WANO Peer Review Follow-up stated that two areas for improvement are considered complete; satisfactory progress has been made (level A) and 15 areas for improvement are not fully complete, however, satisfactory progress is being made and should continue (level B). The plant has done a lot of work to solve the problems, and evidences have been found that the objectives will be reached, with a visible deadline.

b) The Risk Monitor EOOS is an analytic software tool for risk monitoring in the real time. It is used for an assessment of instantaneous risk based on current unit configuration. It enables for nuclear power plant personnel to execute operational decisions to minimize risk during the unit operation as well as maintenance.

In course of 2010 after finishing of update of PSA models for levels 1 and 2 an upgrade and verification of the updated model for Risk Monitor EOOS was performed. Besides monitoring of current CDF the EOOS is extended also for monitoring LERF.

The Risk monitor was and is an initiative of the operator. Details and historical development was presented during the 2008 Review Meeting.

- **Schedule**
  - 2000 – Risk monitor implemented at Bohunice V-2 NPP
  - 2005 – Risk monitor (Safety Monitor^{TM}) implemented at Mochovce NPP
  - 2007 – Update of Safety Monitor^{TM} after Update of PSA
  - 2008 – Operation of updated Safety Monitor^{TM}

- **Purpose**
  - **Nuclear Safety:**
    - daily risk profile creation and evaluation
    - risk evaluation for required systems or equipments states
    - anticipated operational transients evaluation for required systems or equipments states
  - **Maintenance:**
    - risk analyses during maintenance when some of the equipment are out of operation (schedule of the week)
  - **Outage planning:**
    - planning of the maintenance activities during the refuelling outage and their risk evaluation
  - **Shift supervisors and Safety engineers:**
    - evaluating planed actions of MCR personnel to prevent undesirable risk achievement

c) The periodicity of PSR is in accordance to national legislation 10 years. The main corrective measures (with the highest significance) are related to implementation of SAM.

Number of measures grouped into integrated groups:

Group	Group description.	Characteristics of the measures included in the group	Total measures in the group
AM	Accident Management	AM including management of Severe Accidents, emergency planning and Emergency response center	13
DB	Design Basis	Design basis documentation, application of Defence in Depth	5
HW	Hardware – status	Actual physical status of the SSCs	9
JB	Justification of safety	Justification and monitoring of nuclear safety, feedback from operational events	18
QAR	Quality and management	QA, documentation of the management, management and organisation	19
LC	Human factor	Management of human resources and personnel training	18
CM	Configuration Management	Management of modifications, documentation and evaluation of changes	9
PD	Operational documentation	Operational procedures, control of documentation	5
PO	Fire protection	Assessment of fire protection and prevention, fire risk assessment	3

The most significant finding „C" was identified as absence of resolving of LOCA accident on the Reactor pressure vessel nozzle with irreversible coolant loss through reactor cavity ventilation system. This type of event is not considered in the design. And adopted measure (already implemented) was to analyze of LOCA on the reactor pressure vessel nozzle and to develop preventive measure against loss of coolant through the reactor cavity ventilation system. Development of design modification and implementation of the modification is under implementation.

d) The project of the identification of spare parts to be in the plant storage is being implemented. According to the contract, the supplier is obliged to provide for service.

Q.No	Country	Article	Ref. in National Report
40	France	Article 12	§4.3 - p78

Question/ Comment "The use of simulators is clearly described concerning training. Could Slovak Republic indicate if operators of control room are trained using a full-scope simulator?
Moreover could Slovak Republic indicate if the results using simulators are used for data collection to support human reliability quantification?"

Answer Use of a full-scope simulator for the training of special professional competent personnel is a requirement of UJD and their inputs licensee holders uses as a quality indicator. Each set of scenarios has been prepared based on feedback from operational and training experiences.
During the verification of control room personnel on full scope simulator there were some cases, when the operational procedures have been notified based on feedbacks from the verification.

Q.No	Country	Article	Ref. in National Report
44	France	Article 13	§ 4.4.5 p. - p.82

Question/ Comment "The report deals with the inspection of quality assurance system by the regulator.
Could Slovak Republic present details on both the process and the type of inspections carried out?
Could Slovak Republic specify the lessons learnt?"

Answer UJD executes the supervision of licensees´ management system with a focus on nuclear safety in compliance with chapter 3.1.3.3 of the National report. UJD in the area of the Quality Assurance carry out inspection activities, make decisions and approve documentation. UJD specifies requirements for a quality assurance and licensees´ documentation in legally binding regulations. Types of inspections carried out by UJD: fulfilling requirements specified in Quality manual (or ISM manual), fulfilling process requirements specified in Quality assurance programmes for the specific nuclear facility, and fulfilling requirements specified in UJD regulations, e. g. UJD Decree No. 56/2006 Coll. (see Annex 6.2).

Q.No	Country	Article	Ref. in National Report
50	France	Article 15	§ 4.6 - p. 89

Question/ Comment "Could Slovak Republic give more details on:
- the dose limits for the occupational workers and the public,
- the individual dose distribution for workers per year,
- the evolution of the individual dose distribution per year since 2003,
- technical measures which are or will be implemented in order to reduce the effective individual and collective dose?"

Answer

Occupational exposure of workers are:	*An averaged effective dose of 20 mSv per year*
	An effective dose of 50 mSv per year while effective dose over 5 years may not exceed 100 mSv
	An equivalent dose to the lens of the eye of 150 mSv in a year
	An equivalent dose to the extremities (hands and feet) or the skin50 of 500 mSv in a year
For occupational exposure of apprentices of 16 to 18 years of age, the dose limits are:	*An effective dose of 6 mSv in a year;*
	An equivalent dose to the lens of the eye of 50 mSv in a year;
	An equivalent dose to the extremities or the skin50 of 150 mSv in a year.
Pregnant woman dose limit:	*An equivalent dose to the abdomen area of 1 mSv in a whole pregnancy;*
The dose limits for members of the public are:	*An effective dose of 1 mSv in a year;*
	An equivalent dose to the lens of the eye of 15 mSv in a year;
	An equivalent dose to the skin of 50 mSv in a year.

- the individual dose distribution for workers per year,

2009

Collective dose (manmSv)

	EBO	EMO
January 2009		4,438
February 2009	4,455	1,804
March 2009	5,617	8,489
April 2009	2,559	188,505
Mai 2009	1,671	197,66
Jun 2009	0,56	2,023
Jul 2009	126,514	0,737
August 2009	3,161	3,155
September 2009	107,193	27,434
Oktober 2009	12,218	56,779
November 2009	0	2,28
December 2009	2,567	0

Individual dose distribution

	EBO	*EMO*
Dose in interval (5;10> mSv	*0*	*2*
Dose in interval (10;15> mSv	*0*	*0*
Dose in interval (15;20> mSv	*0*	*0*
above 20 mSv	*0*	*0*

- the evolution of the individual dose distribution per year since 2003,

EMO

Collective dose (manmSv)

Year	2003	2004	2005	2006	2007	2008	2009
EMO both units	436,33	451,66	759,43	468,909	318,598	308,603	493,3

Number of monitored workers

Year	2003	2004	2005	2006	2007	2008	2009
EMO both units	1664	1669	1600	1578	1626	1686	1778

Maximum individual dose (mSv)

Year	2003	2004	2005	2006	2007	2008	2009
EMO workers	6,69	4,94	5,55	1,099	4,703	1,446	4,908
Contractors	4,57	5,64	9,74	7,799	4,829	3,836	5,77

Individual dose distribution
EMO

Year	2003	2004	2005	2006	2007	2008	2009
Dose in interval (0;5) mSv	1661	1659	1581	1576	1626	1686	1776
Dose in interval (5;10> mSv	3	5	19	2	0	0	2
Dose in interval (10;15> mSv	0	0	0	0	0	0	0
Dose in interval (15;20> mSv	0	0	0	0	0	0	0
above 20 mSv	0	0	0	0	0	0	0

EBO

Collective dose (manmSv)

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	967,338	742,446	1063,771	471,914			
V-2 (EBO)	436,99	476,798	493,282	676,886	608,215	561,13	266,515

Number of monitored workers

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	1781	1656	1711	1577			
V-2 (EBO)	2082	2290	2345	2353	2138	1994	1508

Maximum individual dose (mSv)

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	9,716	7,121	14,316	6,203			
V-2 (EBO)	4,506	6,181	8,384	11,816			
EBO workers	10,423	10,72	13,073	1,429	1,683	1,692	4,553
Contractors	11,275	7,317	14,442	11,816	15,249	9,711	2,482

Individual dose distribution
V-1 (EBO)

Year	2003	2004	2005	2006
Dose in interval (5;10> mSv	26	7	25	3
Dose in interval (10;15> mSv	0	0	2	0
Dose in interval (15;20> mSv	0	0	0	0
above 20 mSv	0	0	0	0

V-2 (EBO)

Year	2003	2004	2005	2006	2007	2008	2009
Dose in interval (5;10> mSv	0	5	6	11	17	9	0
Dose in interval (10;15> mSv	0	0	0	1	4	0	0
Dose in interval (15;20> mSv	0	0	0	0	1	0	0
above 20 mSv	0	0	0	0	0	0	0

- Technical measures which are or will be implemented in order to reduce the effective individual and collective dose?"

Organizational measures: decreasing of internal plant exposure limits for „general order“ and specific activities.
Technical measures: chemical regime during shutdown, coolant cleaning during shutdown, filtration of the coolant pressure vessel and spent fuel pool.

Q.No	Country	Article	Ref. in National Report
51	France	Article 15	§ 4.6 - p. 91

Question/ Comment Concerning the radioactive effluent discharged in the environment, could Slovak Republic give the values of the effective dose for the critical group which were assessed with the level of discharges released?

Answer Max. IED in the surroundings SE EBO (+ JAVYS)

YEAR	Age (year)	Individual Effective Dose (nanoSv/year)
2008	12-17	216,0
2009	12-17	207,0

The year 2010 will be evaluated according Public Health Authority of the Slovak Republic decision in 2011.

Max. IED in the surroundings SE EMO

YEAR	Age (year)	Individual Effective Dose (nanoSv/year)
2008	0-1	147,3
2009	0-1	181,6

The year 2010 will be evaluated according Public Health Authority of the Slovak Republic decision in 2011.

Q.No	Country	Article	Ref. in National Report
58	France	Article 16.1	§ 4.7.4 - p 98/99

Question/ Comment " The report states that ""the organisational measures in case of a severe accident"".
Could Slovak Republic give details about the protective measures planned in this case?"

Answer Activities of the operator:
If an **extraordinary event classified by the seriousness level** in compliance with **UJD SR** (hereinafter referred to as **Authority**) classification (Alert, On-Site Emergency, Off-Site Emergency) occurs, its control is managed by the **Shift Supervisor up to activation of the Plant Emergency Committee.** Shift Supervisor is lawful to activate Emergency Committee and other professional employees in Emergency Service on duty to support an event classification too.
Note:
Shift Supervisor has to have an actual list of the professional employees in the Emergency Service on duty together with their addresses and call addresses.
If the plant Emergency Committee is activated, the Emergency Committee Chairman takes over the extraordinary event control.
The basic protective measures in case of severe accident are followed

- KJ prophylactic,
- sheltering,
- evacuation.

These protective measures are managed at the on site area only.

Population in the threatened area is informed by sirens. Radius of threatened area is 21 km for Bohunice NPP and 20 km for Mochovce NPP. After finishing a warning signal an oral information from electronic sirens is provided.

SE, a. s. spokesperson informs media on the emergency events. If an **extraordinary event classified by the seriousness level** in compliance with **UJD SR** classification (Alert, On-Site Emergency, Off-Site Emergency) spokesperson will inform media till launching the HQ-SE Emergency Committee into emergency service. After launching the HQ-SE Emergency Committee into emergency service, they inform media and public based on the source documents from the plants. **The SE, a.s. spokesperson or Manager of Communication and Public Relations will prepare the English version of report for media.** After approving the English version of the report by Head of EC HQ-SE, he/she **will send it to the address ENEL, Roma**, ENEL Emergency Committee.

Note:
Pursuant to Act No.42/1994 Coll. as amended, only Ministry of Interior SR is responsible for informing the general public on emergency event at NPP and decision to take protective measures via media. Article 16 Obligations of legal and natural entities, paragraph 5 defines: "Natural persons and legal entities, which ensure radio and TV broadcasting, are obliged to broadcast civil protection information upon the request of MIA, regional office, municipal office or municipality".

In case of an extraordinary event or a serious occupational injury or in case of an occupational injury connected with contamination of injured employees and/or persons **a particular sanitary facility shall be informed** according to the situation character and seriousness of injuries **in accordance with Sanitary Plan**.
In the case of severe accident SE HQ Emergency committee in Bratislava is activated too.
Principles of an extraordinary event are defined in chapter "**Informing of an Extraordinary Event**" shall be always observed.

- **The Shift Supervisor** shall immediately inform a member of the **SE-HQ Emergency Service on duty, a Civil Protection section of Ministry of Interior and UJD SR** of the extraordinary event occurrence over the phone if the event was classified by one of levels of events' seriousness **in compliance with classification** (Alert, On-Site Emergency, Off-Site Emergency).
- **The Shift Supervisor / Emergency commission chairmen shall deliver the primary written information within 45 minutes** from the event detection by a fax or by an e-mail according to the time of the event or accident occurrence so that the **SE-HQ Emergency Committee, the Civil Protection section of Ministry of Interior, the Regional peoples committee / office and the Authority** is provably informed.

- **The Plant Emergency Committee Chairman/ Shift Supervisor** shall assure that the **SE-HQ Emergency Commission, the Civil Protection section of Ministry of Interior, the Regional peoples committee / office and the Authority** will receive the **follow-up written information** on the event or accident course in relation to its changes, **at the latest by one hour** from delivery of the **primary written information** and **then each two hours**.
- **The follow-up written information on the event or accident course delivery shall be made immediately at each change of the event or accident classification.**

All basic protective measures shall be established in the On–site emergency plan. On–site emergency plan must be prepared separately for Bohunice NPP and Mochovce NPP. On–site emergency plans are approved by UJD SR.

Realization of basic protective measures for population shall be established in the Off-site Emergency plan. Regional committees / offices in the threatened areas are responsible for preparing Off-site Emergency plans. These Off-site Emergency plans are approved by Ministry of Interior.

Q.No	Country	Article	Ref. in National Report
63	France	Article 17.1	§ 5.1 - p.107

Question/ Comment

Units 3 and 4 of the Mochovce Nuclear Power Plant are planned to be commissioned in 2013. Consequently, it would be of interest to find details regarding siting in the report
"Could Slovak Republic give details about the factor used for siting evaluation in particular regarding societal and demographic factors, manmade hazards (such as airports), and physical characteristics of the site, such as hydrological and meteorological factors?
Which measures are taken in the event of heat sink loss?
How is considered the radiological impact in the public and local environment considered?"

Answer

SEP, plc, as former predecessor of SE, a.s. provided to the former Czechoslovak Regulatory Authority a comprehensive report which is called Preliminary Safety Analysis Report (PRESAR) before permit for siting was issued in 1982.
The document was updated in 2008 again in compliance with regulatory requirements and also in compliance with Basic Safety Guideline BNS I.01.2/2008.
Preliminary Safety Analysis Report of NPP Mochovce Unit 3&4 in chapter 4 describes in detail following aspects that were taken into consideration for evaluation of the site from nuclear safety point of view:
1. Geography and Geology of MO34 Surroundings,
2. Population and Demography of the MO34 Surroundings,
3. Seismological Assessment of the EMO Site,
4. Meteorological Assessment of MO34 Site,
5. Hydrological Assessment of MO34 Site,
6. Industrial, Transport, and Military Installations in the MO34 Surroundings,

Such data represents huge amounts of information therefore; only a reference is given here.

Q.No	Country	Article	Ref. in National Report
64	France	Article 17.1	§ 5.1.1 and Annexe6 -p.107 and p.

Question/ Comment "On page 137 is presented a list of selected national and international documents applicable to safety of nuclear installations. It is not included inside the Safety Standard NS-R-3 "Site Evaluation for Nuclear Installations"".
Could Slovak Republic give details about the Safety Standard used for its assessment."

Answer Slovakia has its own regulation for siting. These requirements are listed in the Annex 2 of the Decree No. 50/2006 Coll. on nuclear safety requirements for nuclear installations which lays down the requirements for siting of nuclear installations.

Q.No	Country	Article	Ref. in National Report
65	France	Article 17.1	§ 5.1.3 - p. 111

Question/ Comment "The feasibility of emergency plans may be affected by features of the site and changes in local surroundings.
Could Slovak Republic present details about the assessment of these aspects in its emergency plans?"

Answer Each county, the territory of which interfere with the set up EPZ, has to prepare its own off-site emergency plan coordinated with NPP on-site emergency plan and with off-site emergency plans of other interfering counties. NPP is obliged to provide all pieces of information necessary for preparation of off-site emergency plan so that it would be coordinated and compatible with the facility on-site emergency plan. The county office preparing its off—site emergency plan knows the territory of its own county in detail and makes effort to take into account all specifics, which have to be considered and incorporated to the plan and are important for sheltering, evacuation, traffic, communication, check points, decontamination, waste and radioactive material treatment etc. All items, which have to be involved and described in the off-site emergency plans are put down in the law No. 42/1994 On Civil Protection as amended. After all the off-site emergency plan is reviewed not only by Ministry of Interior, which finally would approve it, but it is reviewed also by Ministry of Health and UJD and without positive stand point of these two authorities the off-site plan cannot be approved.
§28 of Atomic Act:
„11) Licensee or regional offices shall be liable to submit emergency plans for periodic review or approval at intervals shorter than five years in the case of the modifications of nuclear installation pursuant to Article 2 letter u), modifications of the organizational structure pursuant to Section 4, or modifications of the means determined to cope with incidents or accidents at nuclear installation or during the shipment of radioactive materials, modifications of the size of emergency planning zone, modifications of the size of common emergency planning zone or modifications of the provision for shipment of radioactive materials or modifications based on the results of exercises or inspections.“

Decree No. 55/2006
§10: (8) The licensee shall submit updates of the internal emergency plan to the Authority in three copies.

Q.No	Country	Article	Ref. in National Report
68	France	Article 18.1	§ 5.2.1 - p. 111-112

Question/ Comment

"The report presents general information about legislation in the field of design and construction.
Could Slovak Republic explain the authorisation process set up (the assessment process of the safety analysis report submitted by the operator before authorisation)?
Could Slovak Republic describe the methods used to perform the safety analysis of a plant design?
For example, does Slovak Republic use the Safety Standards NS-R-1 for its assessment? (""NS-R-1: Design Safety Requirements"")"

Answer

The Nuclear Regulatory Authority of the Slovak Republic (UJD SR) follows the accordance with requirements concerning the authorization process of nuclear installations in Act „Act No. 541/2004“ or in the Regulations (generally binding legal regulations issued on the basis of Atomic Act). The parts of these documents concerning the safety assessment are fully harmonized with the relevant part of IAEA document "NS-R-1: Design Safety Requirements", SAFETY ASSESSMENT, Para 3.10, 3.11, 3.12, 3.13, SAFETY ANALYSIS, Para 5.69, 5.70, 5.71, 5.72 a 5.73.

In the frame of authorization process the applicant has to provide documentation specified in Annexes to this Atomic Act.
Annex No.1 to Act No. 541/2004 Coll. LL.
„DOCUMENTATION OF NUCLEAR INSTALLATIONS NEEDED FOR THE INDIVIDUAL DECISIONS“ contains the parts as follows:

A. Documents to be attached to the written application for permission for siting of nuclear installation

B. Documents to be attached to the written application for building permission for the construction of nuclear installation
a) preliminary safety report providing evidence for the meeting of the legal requirements on nuclear safety based on the data considered in the project,

C. Documents to be attached to the written application for authorisation for the commissioning of nuclear installation and operation
i) pre-operation safety report, specifying the report mentioned under Section B letter a),
j) probability assessment of operation safety of shut-down reactor and for low output levels, as well as for full reactor output in case of nuclear installation comprising nuclear reactor,

To unify the evaluation process by UJD SR, the issue of relevant safety guide is considered. This guide can be used also by the authorisation holder when the documents to be submitted to UJD SR are prepared.

UJD SR has issued such safety guide concerning the content and format of SAR with reference to the Slovak legislation and recommendations based on the relevant IAEA document.

There are other UJD SR safety guides based on relevant IAEA documents to help with elaboration or evaluation of significant parts of SAR (deterministic or probabilistic safety analyses, limits and conditions of safe operation, etc).

The assessment process of SAR is a team work coordinated by a responsible expert. The SAR is circulated among the reviewers to make comments to its content. It is expected that the reviewers shall identify the requirements or recommendation, which are not fulfilled correctly. Then the comments are collected by the coordinator and transferred to the applicant with request to update the SAR according to the comments. The results of independent verification of safety analyses (e. g. by external expertise) are also taken into account.

UJD shall decide on issuance of permission or authorisation after having verified that the applicant meets all the conditions provided for by Atomic Act and the relevant generally binding legal regulations issued on its basis.

The methods used to perform safety analyses are fully harmonized with relevant IAEA or WENRA recommendation (see safety guides remarked above), e. g.
Guidelines for Accident Analysis of WWER Nuclear Power Plants. A Publication of the Extra Budgetary Programme on the Safety of WWER and RBMK Nuclear Power Plants, IAEA-EBP-WWER-01, IAEA, Vienna, December 1995,
Accident Analysis for Nuclear Power Plants. Safety Report Series No. 23, IAEA, Vienna, November 2002,
Accident Analysis for Nuclear Power Plants with Pressurized Water Reactors. Safety Report Series No. 30, IAEA, Vienna, November 2003.

Q.No	Country	Article	Ref. in National Report
69	France	Article 18.1	§ 5.2.2 - p. 113

Question/ Comment "Units 3 and 4 of the Mochovce Nuclear Power Plant are planned to be commissioned in 2013. Could Slovak Republic present more information about the feedback experience used for commissioning?"

Answer Based on experience from commissioning of VVER units in the part SE, a. s. established as a part of Mochovce units 3 and 4 Project Completion and Commissioning unit. The unit consists of people gained experience during long period (more than 30 years) of commissioning and operation in different positions. Members of the team for example are former main technologist, former main supplier (Skoda Nuclear Machinery) main technologist, head of scientific committee during Mochovce units 1 and 2 commissioning and more than 90 % of all other commissioning unit employees then participated in commissioning of all NPP units in Slovakia and Czech Republic.

Significant parts of commissioning team are also former shift managers and operators they served during small and gradual update on Jaslovske Bohunice NPP. This team developed a set of rules describing all commissioning aspects based on gained experience, best practice, IAEA, WANO and INPO recommendations, guides and regulations. Of course all current valid legal obligations and requirements (e.g. Atomic Act No.541/2004 and all its regulations) are included. Commissioning staff is continuously trained and take part in the process of Basic Design transformation into Detailed Design. These experts participate on the construction and tests. Such involvements are essential to complete successfully commissioning stage. All commissioning staff is on regular bases acknowledged about events they occurred on domestic and foreign NPPs. The commissioning unit prepared a detailed schedule for all programs and tests based on experience from Mochovce units 1 and 2 which will be continuously updated according to the first line construction works progress and according to the second line during commissioning a two-week schedule and detailed one-day schedule for work progress during commissioning will be prepared. All these steps were planned and carefully prepared based on experience and world-wide best practice.

Q.No	Country	Article	Ref. in National Report
72	France	Article 19.1	§ 5.3.5.2 - p. 123

Question/ Comment

Examples of information used from other NPPs abroad would have been appreciated. Particularly, the report does not address the measures taken after Forsmark event.

Could Slovak Republic give details about the process used for events analysis and corrective action taken?

Could Slovak Republic clarify the results of table in page 124, in particular the fact that the number of corrective actions are higher than the events analysed?

Could you provide some examples of actions taken in that context?"

Answer

In SE-EBO, events abroad are analysed by particular technical departments that prepare reports about the event abroad review and propose particular corrective actions. These reports are discussed by the Correction and Prevention System Committee that will decide which proposed corrective actions will be implemented.

Such procedure of event review and analysis usually results in approval and implementation of several corrective actions on the basis of a single event.

Thus, a difference between the number of reviewed events and the number of adopted corrective actions mentioned in table on page 124 is explained.

As an example, corrective actions implemented in SE-EBO based on an event that occurred in Forsmark Nuclear Power Plant are mentioned in Annex 1.

Annex 1

Corrective actions adopted and implemented in SE-EBO based on review of event that occurred in Forsmark NPP

To call a special work team to review the event 07_2007_EXT "Unit disconnection from the 400 kV distribution power grid with the follow-up failure to start the emergency DG in sections A and B" by technical departments, to identify potential problems at occurrence of similar event in V-2 NPP, and to propose corrective actions to prevent occurrence of similar events.

Responsible: A0143 (with A0310, A0320, A0330 as participants) Deadline: 30 April 2007

The special team met on 2 May 2007, reviewed the event and proposed the NEW CORRECTIVE ACTIONS No. 2, 3, 4, and 5

To assess probability of occurrence of similar event in SE-EBO V2.

Responsible: A0140 Deadline: 30 June 2007

A probability of occurrence of the similar event in SE-EBO V2 was discussed in the special team meeting held in attendance of A0143, A0320, A0330, and A1170 on 2 May 2007 and after assessment made by a manufacturer of the exciter, also in the meeting held on 25 June 2007. According to the statement given by the exciter's manufacturer, the generator's stator voltage should not exceed the value of 110 % Un at the symmetric three-phase fault. After consideration of other possibilities, a manufacturer of rectifiers and current inverters was asked for giving his opinion - how our rectifiers and current inverters would behave at the similar peak voltage, what would be the manufacturer's recommendations related to such unwanted conditions, what measures are adopted by the manufacturer to prevent recurrence of such failure and what are possibilities of their application under SE-EBO and SE-EMO conditions.

To ask the generator's exciter manufacturer for giving his opinion – to evaluate the exciter's behaviour from the viewpoint of occurrence of overvoltage at occurrence of similar situations in the external power grid.

Responsible: A0320 Deadline: 31 May 2007

The exciter's manufacture verified the exciter's behaviour at a short circuit in the power system using a model. The following results from the evaluation:

- In case of asymmetric faults (one-line-to-ground fault and two-phase fault – the case in Forsmark NPP), the value of voltage during the short circuit is deeply below the nominal voltage (below 40 % Un). At the time of the short circuit disconnection, voltage at the generator's stator under the most unfavourable condition (Pn = 220 MW, Q = 136 MVAr) will reach the value of 100 % Un. -In case of symmetric fault (three-phase fault), and if the active power is Pn = 220 MW and the reactive power is Q = 0 MVAr, voltage during the short circuit is deeply below the nominal voltage (below 40 % Un). At the time of the short circuit disconnection, voltage at the generator's stator will reach the maximum value of 105 % Un.
- In case of symmetric fault (three-phase fault), and if the active power is Pn = 220 MW and the reactive power is Q = 136 MVAr, voltage during the short circuit is deeply below the nominal voltage (below 50 % Un). At the time of the short circuit disconnection, voltage at the generator's stator will reach the maximum value of 115 % Un. This increased voltage (peak) takes about 200 ms, out of which the value higher than 100 % takes about 100 ms.

- If we take into account that the generator's reactive power values range from about -50 to about +50 MVAr in real operations, than it can be expected that the generator's stator voltage should not exceed the value of 110 % Un at the symmetric three-phase fault.

To review emergency operating regulations (PHP) from the viewpoint of control of a similar failure in SE-EBO V2, in cooperation with A1170.

Responsible: A0140, Cooperation: A1170 Deadline: 30 June 2007

The PHP regulations and the abnormal operating regulation contain a manual for dealing with situations when no diesel generator is connected due to a home consumption blackout. Thus, it can be stated that EBO regulations consider the similar scenario like in case of the external event 07_2007_EXT (Forsmark NPP), and therefore the PHP regulations in EBO must not be amended with regard to this event.

To check a possibility of simulation of similar event at the V2 simulator.

Responsible: 62100, Cooperation: A0140 Deadline: 30 June 2007

On 17 May 2007, 62100 sent a letter Ref. No. SE/2007/072134 to VUJE Trnava Training Centre where, based on corrective actions adopted by the V2 NPP Failure Committee in April 2007, it asked for review of a possibility to simulate the similar failure event like the one that happened on 26 July 2006 in Unit 1 of the Forsmark Power Plant 1 in Sweden using the V2 simulator. The purpose of simulation is to evaluate the V2 NPP behaviour, and to review the PHP procedures from the viewpoint of control of the similar failure in SE-EBO V2. The operation event was attached to the letter.
VUJE Training Centre answered by letter Ref. No. V02-2170/2007 from 5 June 2007 where it described a draft task and time sequence of events of the similar situation, the final Unit condition, and assumed solution according to PHP. This process can be simulated at the SE-EBO request in October 2007 after the end of the simulator's reconstruction and completion of verification tests.

To call a meeting where actions recommended by the important operational experience report "WANO SER 2007-1" will be reviewed and analysed, and it will be justified whether it is necessary to adopt individual corrective actions also in SE-EBO V2 or not. If not, then justify why.

Responsible: A0140, A0320, A1100 Deadline: 30 November 2007

The working meeting was held on 19 November 2007 and based on the WANO SER 2007-1 recommendation, the corrective actions 7, 8, 9, 10, 11, 12 and 13 were proposed.

To specify configurations of circuit breakers in the substation that impact sensitivity of protections at line-to-ground faults.

Responsible: A0320, Cooperation: A0350 Deadline: 31 January 2008

Electric protections of EBO substation are independent from the condition of circuit breakers. Condition of circuit breakers does not impact the sensitivity of electric protections.

To specify an operation condition of substation equipment affecting the work of protections.

Responsible: A0320, Cooperation: A0350 Deadline: 31 January 2008

Function:	Power supply of electric protections of the 400 kV substation by auxiliary voltage
Location:	1DTE2.3, 2DTE2.3
Component:	Circuit breaker FA11A, FA11B
Required condition:	On

Function:	Power supply of distance protections with 100 V voltage from measuring voltage transformers
Location:	Circuit breaker cabinet MF3TE in Units 3&4 400 kV substation
Component:	Circuit breaker FA11, FA15
Required condition:	On

Function:	Power supply of distance protections with 100/3 V voltage (open triangle) from measuring voltage transformers
Location:	Circuit breaker cabinet MF3TE in Units 3&4 400 kV substation
Component:	Circuit breaker FTE.B
Required condition:	On

Function:	Selection of operation of differential protection of bus bars
Location:	DOE1.2, DOE2.5
Component:	Switch S7F15
Required condition:	On

Function:	Selection of operation of the 400 kV switch failure automation
Location:	DOE1.1, DOE2.6
Component:	Switch S6
Required condition:	Position “ON”

Function:	Selection of operation of switch 1,2AC-QM1
Location:	DOE1.2, DOE2.5
Component:	Switch SQM1
Required condition:	Position “OPERATION”

Function:	Selection of operation of repeated switching
Location:	DOE1.3, DOE2.4
Component:	Switch S2F7
Required condition:	According to requirements of SED Zilina dispatcher (normally set to “Repeated switching”)

Function:	Selection of operation of frequency relay KF 37
Location:	DOE1.3, DOE2.4
Component:	Switch SA5
Required condition:	According to requirements of SED Zilina dispatcher (normally set to “ON”)

Function:	Selection of operation of stand-by distance protection
Location:	DOE1.5, DOE2.2
Component:	Switch SF2F25
Required condition:	Position “STAND-BY”

Function: Selection of tests of pulling distance protection characteristics
Location: DOE1.4, DOE2.3
Component: Switch S4
Required condition: Position “PULLING”
FULFILLED, IMPOSED NEW ACTION No. 15

To find out whether the employees have been acquainted with these conditions (actions 2&3/07_2007_EXT) and to check whether the working procedures comply with these conditions.

Responsible: 23100, A1100 Deadline: 31 January 2008
Electro and I&C central department employees have been acquainted with conditions of disconnection of circuit breakers and disconnectors under load. They are warned of this issue also during re-trainings in the part about making the arc and the environment ionisation. Since they work in secured power equipment to which procedures relate, there is no space for making conditions of disconnection of circuit breakers under load.

To incorporate training and drills to achieve an ability to identify potentials to affect functionality of the substation protections to the training programme of daily workers from A0320 and shift electro workers.

Responsible: 62100, Cooperation: A0320 Deadline: 31 January 2008
Loss of the external power grid and subsequent failure of two electric subsystems related to safety (CA imposed by the Failure Committee in November 2007) - it was included in training of shift electro workers and A1183 within training days of shifts in January 2008. The training was made from 7 January to 11 February 2008.

To check whether overvoltage at uninterrupted power supply sources has a potential to endanger fulfilment of safety function of supplied switchboards and equipment. To consider also a possibility of occurrence of overvoltage higher than assumed for the current inverters in design.

Responsible: 24700, Cooperation: A0320 Deadline: 31 January 2008
If dynamic changes of the input power grid voltage from 80 % - 130 % to 150 % of the nominal value should be controllable, then PROFITEC-S rectifiers must be, according to the manufacturer (AEG), equipped with both the analogue and the digital monitoring that will ensure quick disconnection of rectifiers at the voltage increase. The monitoring equipment and required modifications must be ordered at the supplier as modification/upgrade of rectifiers.

- According to the manufacturer, modifications of rectifiers are not needed.
- The existing concept of RPS and RLS supply by 220/24 DC converters, where the blackout could occur at overvoltage disconnection of current inverters too, is reviewed today by the manufacturer (AEG). In February 2008, 24700 expects receipt of an opinion with manufacturer’s recommendations that will be applied according to the work rules. Fulfilled

To ensure that equipment will not be disconnected under load at execution of works in nuclear power plant substations if not designed for this purpose.

Responsible: 23100, A0350, A1100 Deadline: 31 January 2008
Operation workers handle equipment in R400kV, R220kV and R110kV substations based on manipulation orders included in work rules 3,4TPP-410, 3,4TPP-405, 3,4TPP-451, 3,4TPP-407, and 3,4TPP-409. The aforementioned manipulation procedures have been prepared to keep rules for safe shutdown of electro equipment, it means that the following principle is observed:

1. At first, appliances (consumers) are disconnected according to schedule;
2. Then the given equipment is switched off by a switch;
3. And finally the required equipment part is disconnected by a circuit breaker.

EHV and HV equipment is handled according to 6-PVD-004, PNE 33 2102, STN 343100 and the aforementioned work rules, using a “B” order. The equipment is blocked for the “B” order by at least 2 workers according to Regulation No. 718/2002 Coll. qualified according to Article 23. The “B” order is a document where individual equipment handling steps are given. The B order is issued by an electro shift foreman who is authorised to do this. Other workers, working at the blocked EHV or HV equipment, work using the “B” order where they have described which equipment is switched off and blocked and which equipment is under voltage. The work leader is responsible for the work team that can make only activities authorised to do according to the B order.

To review agreements and operating regulations between the Power Plant, other SE units and the external power grid operator to ensure their adequacy and comprehensibility, and to realise importance of a reliable external power supply source for the Nuclear Power Plant. To consider review of activities executed to implement recommendations mentioned in document SOER 1999-1 and its supplement from 2004 with regard to this event.

Responsible: A1010, Cooperation: A0320 Deadline: 31 January 2008

A1110 and A0320 do not have sufficient competences to decide which measures must be contractually agreed with the distribution power grid operator.

ACTION CANCELLED AND IMPOSED NEW ACTION No. 14

To consider recommendation No. 4 from report SER 2007-1:

(“Review agreements between the Power Plant, other power company teams and the external power grid operator and ensure that they are sufficiently detail for all organisations and these organisations understand their responsibilities for assurance of reliable external power supply sources for the Nuclear Power Plant.”)

and identify technical requirements that should be ensured by the external power grid operators to guarantee a reliable nuclear power plant power supply.

Responsible: 25120 Deadline: 31 March 2008

Technical requirements for power supply of the home consumption stand-by power supply system, the power output and the Unit home consumption result from the power supply home consumption basic design, from requirements for nuclear safety and demands of the Unit operation regimes.

Legislation dealing with the NPP power supply system design: Regulation of NRA SR No. 50/2006 Coll. on requirements for NPP nuclear safety at their operation.

Requirements mentioned in Annex 3 / Part B / I. Power supply system / paragraph (1):

Concerning nuclear safety important systems, the following power sources must be considered in design:

a) operation power supply from main generator;
b) two various power grid sources from different EHV substations;
c) emergency power supply from an autonomous source situated in the NPP site.

Legislative requirements a) and c) have been fulfilled and reflected in the NPP design.

Requirement b) must be fulfilled by a contract concluded with the external power grid operator.

Temporarily, the requirements for the external power grid operator shall be defined within valid SE-EBO design, safety and operation documents, and they can be divided as follows:

A/ Requirements for configuration of the stand-by power supply and 400 kV line for power output for various Unit regimes.

The configurations result from the following operation and safety documents:

Power Supply System Design

Unit Operation Limits and Conditions

Safety Analysis Report of V2 NPP

EBO V2 Power Output and Home Consumption Stand-by Power Supply Schemes (6-TPP-466)

TPP for Normal Unit Operation and for Unit Electro Equipment

B/ Technical requirements (parameters of consumed electricity)

Results from the V2 NPP power supply system design.

TPP for Normal Unit Operation and for Unit Electro Equipment

C/ Requirements for reliability of the stand-by supply and the 400 kV line for the power output and the home consumption power supply.

The requirements for reliability result from the probabilistic safety analysis and the quantified impact on the reactor core damage frequency (CDF). Based on the PSA study, the following requirements for the external power grid have been formulated:

1. To exclude or minimise the existing Unit home consumption stand-by power supply blackout and the 400 kV line for the power output (LOOP) fault during the Unit power operation;
2. To exclude or minimise the Unit home consumption stand-by power supply blackout during the shutdown Unit for main overhauling purposes;
3. To guarantee the external power grid equipment reliability so the probability of failure of the existing 400 kV line for the Unit power output and of the respective stand-by power supply line of 1.0E-2/year at most;
4. Probability of the stand-by power supply line failure of 5.0E-02 at most during the shutdown Unit for main overhauling purposes;
5. In case of the Unit stand-by power supply line failure during the Unit main overhaul, to ensure the stand-by power supply recovery within an hour.

To exactly define the technical specification of contracts, a technical team where representatives from individual technical disciplines (technical support, nuclear safety, operation regimes, electro administration) and a responsible representative from the trade department who will prepare the subject contracts, know their limit conditions and will be acquainted with already concluded contracts in this field will be included.

IMPOSED NEW ACTIONS No. 16, 17, 18 and 19

To prepare a supplement to the operating regulation 3,4-TPP-410 - new handling regulation named as follows: "Check of Operating Condition of Equipment with an Impact on Work of Electric Protections" (before energising the 400 kV line).

Responsible: A0320 Deadline: 31 May 2008

Revision No. 8 to 3-TPP-410 and revision No. 8 to 4-TPP-410 were issued.

To ensure marking buttons serving for starting diesel generators from control panels situated in the diesel generator station with technological ID codes of the respective diesel generator.

Responsible: A0310 Deadline: 30 April 2008

The buttons were marked in April 2008.

To check whether the operating procedure 6-TPP-315 contains an unambiguously described start-up procedure of diesel generators from control panels situated in the diesel generator station.

Responsible: A0310 Deadline: 30 April 2008

The procedure of manual DG start-up from control panels in the DG room is not unambiguously described in 6-TPP-315. The manual start-up procedure is not described in any manipulation procedure 6-TPP315. The descriptive part contains a mention of the manual start-up in paragraph 3.2 I&C and DGS Functions.

Based on the aforementioned, A1180 will be asked for completion of the manipulation procedure for manual start-up of diesel generators from panels situated in the DG station by an internal notice.

FULFILLED, IMPOSED NEW ACTION No. 20

To check whether methods of the DG start-up from MCR, ECR and from control panels situated in the diesel generator station are clearly and unambiguously described in the PHP procedure.

Responsible: 25120 Deadline: 30 April 2008

The PHP regulations describe only top instructions for all activities. Detail procedures of how to perform individual activities must be described in respective operating regulations, and they must be trained.

To hand over organisational requirements for the external power grid formulated in a statement issued by 25120 to the 80300 Unit Manager to be able to solve them together with recommendation 1 from SOER 1999 1.

Responsible: A0143 Deadline: 30 April 2008

Requirements formulated in the statement of 25120 were handed over to the Safety and Environment Section Manager by an internal notice.

To complete 6-TPP-315 with a handling procedure for manual start-up of diesel generators from panels situated in the diesel generator station.

Responsible: A1170 Deadline: 30 June 2008

Revision No. 5 of 6-TPP-315 was issued.

Q.No	Country	Article	Ref. in National Report
73	France	Article 19.1	General

Question/ Comment "The roles of regulator and technical support is not sufficiently explained. Are appraisals carried out by JAVYS? Slovakia S E? Vuez? VUJE? A clarification would be appreciated."

Answer There is a Division of safety analysis and technical support within the UJD organization structure responsible for review of safety documentation and performance of independent safety analyses including deterministic (reactor physics, thermal-hydraulics and structural analysis) as well as PSA analysis. The division numbers 7 experts. The staff is periodically re-trained in the responsible areas and involved in some research and development activities focused on the safety evaluation and development/ validation of analytical models and tools. The division is equipped with necessary analytical tools such as computer codes. This number of experts is basically sufficient for the review and assessment of documentation related to safety analyses of Slovak nuclear facilities. For specific areas, which the division has not fully covered, an external co-operation with technical organizations and domestic universities is arranged on case-by-case basis. In some cases a support from the IAEA, OECD/NEA, EK or regulatory bodies of the countries operated WWER reactors is arranged. There are no consultations on increasing or decreasing the division staff number at this time. At present there are sufficient experts available to UJD to fulfil its duties.

There is a number of technical support organisations available to the operator in different areas. For example the National Report on pages 28, 31, 38 refering to some of them. In addition the operators have their own technical support units/capabilities.

Q.No	Country	Article	Ref. in National Report
74	France	Article 19.1	§ 5.3.5.2 p. 121

Question/ Comment Examples of trends important for safety would have been appreciated. Could Slovak Republic present a short list of criteria used to trigger an extraordinary failure commission?

Answer Examples of safety-important trends:

- Occurrence of problems affecting readiness of safety systems
- Occurrence of occupational injuries
- Occurrence of OH&S-related problems
- Occurrence of human performance problems
- Recurrence of problems
- Occurrence of problems evoked by documentation imperfections

Criteria for calling an extraordinary failure committee for Slovak nuclear power plants have been set in Annex D to the Methodical Guide JE/MNA-132.05 “Event Management and Recovery” – see Annex 2 thereto.

Annex 2 (excerpt)

LIST OF EVENTS FOR WHICH EEC CALLING IS REQUIRED

No.	**Description of problem/event**	**Comment**
1	A problem or an event meeting criteria of an accident or an incident pursuant to Act No. 541/2004 Coll.	See criteria in regulation JE/MNA-132.06
2	Automatic reactor scram from critical to sub-critical condition or manual enforced reactor shutdown by a button.	
3	Defect fuel assembly, absorber, shielding assembly or fresh or spent nuclear fuel container handling.	This means breach of nuclear safety conditions at nuclear material storage or handling.
3	Unscheduled safety system activation.	
4	Non-serviceability of a safety system (that should be in the stand-by duty according to Limits and Conditions) evoked by technical defect of installation, by incorrect human performance, or by other external impact.	The safety system non-serviceability means a condition which results in a loss of function of some of the system components so the system is not serviceable in compliance with L&C requirements.

5	Loss of primary coolant natural circulation.	The primary coolant loss means stoppage of the coolant flow through the core that was identified on the basis of primary circuit parameters regardless its duration.
6	Fire in nuclear installation premises and site.	This means such fire that caused an operational event occurrence according to Act No. 541/2004 Coll. Article 27 paragraph 3a).
7	Breach of Limits and Conditions	
8	Loss or stealing of nuclear material or other similar radioactive material, or a suspicion or knowledge of nuclear material damage or other similar radioactive material damage, or of damage of monitoring equipment and seals monitoring nuclear material condition and flow.	The “nuclear material” means: - spent nuclear fuel; - fresh nuclear fuel; - radioactive waste.
14	Radiation incident	
15	Serious industrial accident	
16	Events during PET at which the equipment was damaged or electricity production and supply was reduced, or at which an emergency shutdown plant of PET was used.	
17	An occupational injury that resulted in death, severe physical injury or if an assumed duration of sick leave exceeds 42 days (that occurred during execution of work in NI premises) etc.	Severe occupational injury pursuant to Article 17 paragraph 4 of Act No. 124/2006 Coll. on OH&S.

GERMANY

Convention on Nuclear Safety
Questions Posted To Slovakia By Germany in 2011

Q.No	Country	Article	Ref. in National Report
1	Germany	General	all

Question/ Comment The National Report of the Slovak Republic represents a good practice document that convincingly communicates the level of nuclear safety achieved in the Slovak Republic. New information compared to the 4th report is highlighted and gives the reader an outline on important activities and achieved results since 2007.

Answer Slovakia appreciates the positive statement.

Q.No	Country	Article	Ref. in National Report
10	Germany	Article 6	page 23ff

Question/ Comment Comparing information given for Bohunice-3/4 and Mochovce-1/2 it turns out that CDF for full power operation of the Bohunice units is less the value of Mochovce ones.
Please give more details for the corresponding results. Moreover, in the PSR for Mochovce-1/2 in total 114 corrective measures were elaborated, which will be implemented in 2013-2016 (p. 36). The number of open correction measures for Bohunice-3/4 is less (p. 27/28).
Are these measures comparable, at least partially? Are there measures from Mochovce which are valid for Bohunice as well, but not yet scheduled?

Answer PSR Bohunice was carried out for plant status in 2006 and for Mochovce in 2008. The criteria for both PSR was based on WENRA, but in Bohunice it was WENRA 2006 and in Mochovce WENRA 2008. The most of corrective measures are comparable in both plant, but due to different criteria in Bohunice there were identified less issues and adopted less measures.
The values of CDF for EMO1,2 and EBO 3,4 are different for the following reasons:

- using of „plant specific data" – reliability data for modelled equipment of the plant and frequencies of initiating events were stated on the base of the real operation history particularly for EMO1,2 and EBO3,4
- analysis of human reliability (HRA) – for EMO1,2 a newer methodology recommended by US NRC (EPR1) was used which represents more conservative results than the methodology used for EBO3,4
- differences in the EBO and EMO designees and differences in emergency procedures (EOPs) following from that
- differences in the construction of failure and event trees (design/EOPs), following from design and operation differences

Measures adopted in the PRS project in the nuclear safety related area are very comparable because of the same methodology implemented in both projects. The number of individual measures is not fully representative of plant safety level (as measured by PSA), significant part of findings are related to documentation, QA and operational practices. Therefore the mere number of measures does not directly reflect on CDF.

In 2002 to 2008 the program of the Bohunice plant modernisation was carried out during which new measures were solved and implemented what resulted in enhancement of safety. Nevertheless, there are new requirements which resulted from a new regulatory requirements. These requirements are the same for both nuclear power plants and they are solved together.

The PSA has an important role in the evaluation of nuclear safety in Slovakia. Based on PSA results, specific measures were proposed, approved and implemented to increase the safety of both plants. Obtained results demonstrate that CDF has decreasing trend. Of course, PSA is not capable to evaluate all safety aspect of NPP and its operation and main corrective measures were developed in frame of deterministic approaches, as these are main project requirements.

Q.No	Country	Article	Ref. in National Report
11	Germany	Article 6	page 28

Question/ Comment In the National Report the status is given by Oct. 31, 2009. What is the current status of fulfilment of correction measures coming from the PSR for Bohunice NPP, units 3 and 4?
How are the remaining measures ranked with respect to their importance for nuclear safety of the units?

Answer In the Group „Accident management“ there are three measures regarding to Updating EBO SAMGs in terms of actual modifications with safety significance ranking B3 and B4 (see table below). In the Group „Design basis” there is one remaining measure Development of Design basis justification in adequate range with safety significance ranking B4. The deadline for these measures is end of 2013.

Ref	Applicable criteria for non-compliance assessment	Assigned Safety significance		
		A - Low	B - Medium	C - High
1	Impact on plant risk of a new PIE or of increased frequency of a PIE	**Small** (negligible) impact	**Significant**	**Major**
2	Impact on a physical barrier to the release of radioactivity	Barrier is **Affected**, but integrity remains maintained	Barrier function is **Degraded** (integrity is jeopardized)	Barrier function is **Seriously degraded** or completely violated
3	Impact on one or more levels of defence in depth	**Affected** but functional	**Significantly affected** (functionality is jeopardized)	**Lost** (non-functional)
4	Level of staff training and operational performance	**Improvement needed** (non-compliant against recommendations)	**Inadequate** (non-compliant against recommendations)	**Unacceptable** (violation of legislation)
5	Level of safety culture	**Improvement needed**	**Inadequate**	**Unacceptable**

Q.No	Country	Article	Ref. in National Report
18	Germany	Article 8.1	pages 51ff and 71ff

Question/ Comment Referring to Question No 29 of “Questions Posted to Slovakia in 2008” and the corresponding answer from the Slovak Republic:
It was answered with respect to an adequate number of technical experts working for the regulatory body that the corresponding UJD division employs 7 experts, and that no increasing or decreasing of the staff number is foreseen.

What is the present status of the staff and plans for its development? Does UJD use the experience from STUK oversight of the Finnish NPP OL3 licensing to justify the need for recruitment of additional staff (appr. 20 manyears/NPP unit in the different technical areas), as well as the increased need for TSO support with regard to Mochovce-3/4 NPP licensing and construction?
Remark: In principle, a corresponding general approach is valid as formulated in Sub-section 4.2.4 of the National Report. However, the situation is not clear with direct respect to Mochovce-3/4 NPP.

Answer The increase in staffing during the last period is due to the licensing of Mochovce 3&4. The comparision with STUK is not appropriate because in Slovakia there is experience with this type of NPP.

Capabilities of the regulator – UJD (human resources)					
Development of human resources					
Number of Employees	**1993**	**1998**	**2005**	**2009**	**2011**
	39	**81**	**81**	**89**	**93**

Q.No	Country	Article	Ref. in National Report
19	Germany	Article 8.1	84

Question/ Comment According to Article 14 of the Convention on Nuclear Safety appropriate steps shall be taken to ensure that "Comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation …".
Referring to Question No 71 of "Questions Posted to Slovakia in 2008" and the corresponding answer from the Slovak side, among other documents for Mochovce-3/4 NPP a POSAR is mentioned to be delivered to UJD for approval. There is no indication given about it in the present National Report.
What is the status of the safety documentation for Mochovce-3/4 NPP having in mind their announced commissioning in 2012/13?

Answer By decisions No. 266/2008 dated Aug. 14, 2008 UJD issued the consent with realization of changes of selected equipment influencing nuclear safety in the extent of initiation project (based on the building code). By the UJD decision No. 267/2008 dated Aug. 14, 2008 UJD issued (based on the Atomic Act) the consent with realization of changes in the document "Preliminary Safety Report of NPP Mochovce, units 3 and 4". (page 37 of the national report)

The first "Preliminary Safety analysis Report of NPP Mochovce, units 3 and 4" was elaborated in 1984 and 1986. Licensee submitted an up-dated PSAR for UJD on the basis of present legal requirements. Changes in „Preliminary Safety Analysis Report of NPP Mochovce, units 3 & 4" was approved by the UJD decision No. 267/2008.
Further information in the chapter 2.3.5, page 37 of the National Report.

Q.No	Country	Article	Ref. in National Report
46	Germany	Article 14.1	84 and 118

Question/ Comment According to Article 14 of the Convention on Nuclear Safety appropriate steps shall be taken to ensure that “Comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation …”.
Referring to Question No 76 of “Questions Posted to Slovakia in 2008” and the corresponding answer from the Slovak side:
“Licensee submitted to UJD for information list of all safety improvements that intends to realize on Mochovce unit 3 and 4. UJD assessed and compared these safety improvements with those that were implemented on Mochovce unit 1 a 2 and can confirm that all these safety improvements will be realized also on Mochovce unit 3 and 4.
In addition on Mochovce unit 3and 4 also safety improvements needed for control of severe accident under procedure SAMG will be implemented. One of the new safety improvements is the realization of system for external reactor pressure vessel flooding.”

Answer The initial MO34 design was revised in part „Severe Accidents“. Yes, based on the performed studies and analyses the conditions and technical solutions of the possibility to cool RPV are stated in the initial MO34 design, too.

Q.No	Country	Article	Ref. in National Report
47	Germany	Article 14.1	36

Question/ Comment In the 2010 National Report a set of 114 correction measures for Mochovce-1/2 NPP is mentioned (p. 36) to be introduced up to 2016, most of them up to 2013. Will all measures be implemented in the units 3 and 4 before the commissioning?
Also, SAMG for NPP Mochovce will be put in practice in 2018 (p. 118). What is the deadline for SAMG implementation at Mochovce-3/4 NPP with respect to their commissioning date (e.g. will external cooling of RPV by reactor pit flooding already be considered)?

Answer All measures for the management of severe accidents are included in the initial MO34 design. The implementation is in accordance with the schedule of MO34 completion.

Q.No	Country	Article	Ref. in National Report
48	Germany	Article 14.1	p. 84

Question/ Comment Does the safety assessment of the Mochovce NPP, units 3 and 4, consider air craft crashes?

Answer Two types of aircraft crashes need to be analyzed separately: random crashes and malevolent crashes.
Concerning random crashes, the probability of such events has been evaluated in line with IAEA recommendations (Safety Guide NS-G-3.1) and the value calculated for the Mochovce site is below the internationally-accepted threshold for which dedicated engineering measures are recommended.

Concerning malevolent crashes, it is useful to remark that, nowadays, the vast majority of national legislations in Europe and worldwide do not prescribe deterministically aircraft-crash loading conditions on the design of NPPs.
However, in 2008 the European Commission - within EURATOM Article 43 - expressed its viewpoint of Mochovce 3&4 project and, while acknowledging that MO34 is compliant with national and international requirements in the field of nuclear safety, recommended for the subsequent of activities to further identify, in close collaboration with the national authorities, appropriate additional features, functional capabilities and management strategies to withstand a potential deterministic impact from an external source (e.g. a small malevolent aircraft impact).
Such recommendation was subsequently converted into requirement of UJD SR and, in this way, duly taken into account by SE in the continuation of the design and safety-assessment activities.

Q.No	Country	Article	Ref. in National Report
52	Germany	Article 15	page 91, section 4.6

Question/ Comment Please specify dose limits to workers.
Are dose limits defined for the occupational exposure of trainees, students and pregnant women?

Answer Limits for workers:
Effective dose 100 mSv in a consecutive 5 calendar years,
maximum effective dose 50 mSv in any calendar year
Equivalent dose for the skin, hands, forearms, feet and ankles 500 mSv in a calendar year.
Equivalent dose for the lens of eye 150 mSv in a calendar year.
Yes, there are defined limits for trainees, students and pregnant woman.
Dose limits are based on Article 9 – Article 13 in EU Council Directive 96/29/Euratom.

Q.No	Country	Article	Ref. in National Report
53	Germany	Article 15	page 91, section 4.6

Question/ Comment Please provide some overview data for the occupational exposure at the NPP sites.

Answer See answer to question No. 50 please.

Q.No	Country	Article	Ref. in National Report
54	Germany	Article 15	page 92, section 4.6

Question/ Comment What is the definition of the “critical group“?

Answer The critical group is a group of members of the public receiving the highest doses from the given source which are homogeneous with respect to exposure from that source.
The critical group is an existing one not a fictive group on a fence of the installation.

Q.No	Country	Article	Ref. in National Report
59	Germany	Article 16.1	4.7.2.3, page 97

Question/ Comment It is stated that the NI operation licensee has on-site emergency plans elaborated. Are these plans reviewed by the competent authority and updated on a regular basis?

Answer §28 of Atomic Act:
„11) Licensee or regional offices shall be liable to submit emergency plans for periodic review or approval at intervals shorter than five years in the case of the modifications of nuclear installation pursuant to Article 2 letter u), modifications of the organizational structure pursuant to Section 4, or modifications of the means determined to cope with incidents or accidents at nuclear installation or during the shipment of radioactive materials, modifications of the size of emergency planning zone, modifications of the size of common emergency planning zone or modifications of the provision for shipment of radioactive materials or modifications based on the results of exercises or inspections."
Decree No. 55/2006 §10: (8) The licensee shall submit updates of the internal emergency plan to the Authority in three copies.

Q.No	Country	Article	Ref. in National Report
60	Germany	Article 16.1	4.7.4, page 98

Question/ Comment What is the reason that the radius of the area under threat differs for NPP V-1 Bohunice (25 km), NPP V-2 Bohunice (21 km) and NPP Mochovce (20 km). What is the difference to the area at risk (page 95), which is stated to be different in radius only for NPP V-2 (30 km)?

Answer Operation of both NPP V-1 units was terminated: unit 1 in 2006 and unit 2 in 2008. It means that at present only two units of the NPP V-2 are in operation on site. Also several improvements of NPP V-2 towards nuclear safety were implemented. Therefore the NPP operator, after having considered all issues concerning safety decided to submit a request to reduce radius of emergency planning zone (EPZ) in accordance with Decree No.55/2006. UJD reviewed the documentation and verified presented calculation and finally approved a smaller radius of EPZ for the Bohunice site.
As to the NPP Mochovce the size of EPZ radius was originally determined to be 20 km due to the fact that this NPP was commissioned much later and all state-of-art improvements were implemented during construction. Therefore it was decided that the radius of EPZ would be 20 km.

Note: A mistake was made in the translation; instead „30km around NPP V-2" correct is „21km around NPP V-2".

HUNGARY

Convention on Nuclear Safety
Questions Posted To Slovakia By Hungary in 2011

Q.No	Country	Article	Ref. in National Report
2	Hungary	General	Preface, p.12

Question/ Comment NPP Bohunice A-1

Q: Could you detail, what does phases I and II of decommissioning mean exactly? Does the end of phase II mean the end of the decommissioning also? When do you plan to complete the decommissioning of phase II?

Answer Process of NPP A-1 decommissioning is devided into 5 decommissioning phases (the second one under implementation currently). End of decommissioning process (brown field foreseen) is planned in 2033.

According to the Strategy of the back-end of peaceful use of nuclear energy:

- I. Stage (formerly named as “giving the NPP into radiation-safe status (defined as the status, when the spent fuel is removed – completed, and liquid or wet radioactive waste (some of them are untypical) removed, treated, conditioned – it has not been completed yet; the management of some waste streams (e.g. sediments from so-called “spent fuel long-term storage” basin) has turned out to be more difficult as previously expected. End of the 1st stage was planned on 2008 (the management of mentioned sediments will continue; it is expected that all long-term storage sediments will be treated by 2018).
- II. Stage – 2009 – 2016 – after this stage only three objects remain within the NPP A1 object structure: object 30 (reactor building), object 32 (steam generators) and 32 A (inactive ancillary building connected with object 30). Some objects and facilities usable for the radioactive waste management will be transferred into the nuclear facility TSU RAO (Technologies for treatment and conditioning of radioactive waste).
- Next stages preliminarily:
  - III. Stage – 2017 – 2020 - dismantling of facilities where the satisfactory information on their contamination are known (or it is expected its relatively easy determination at the previous stage),
  - IV. Stage – 2021 – 2024 – dismantling of the primary circuit pipes and valves in object 30, in object 32: dismantling the primary circuit pipes and turbo compressors, dismantling of high-pressure gas holder and some other devices,

V. Stage – 2025 – 2033 – dismantling of remained facilities and devices (including reactor and steam generators). (See also overall summary of question – word document answer question No. 53)

Q.No	Country	Article	Ref. in National Report
20	Hungary	Article 8.1	3.1.3.3 p.57

Question/ Comment Sanction

Could you provide a statistic how often does the UJD use the tool of sanction? Could you describe briefly, which are the typical situations when the using of sanction were necessary?

Answer Nuclear Regulatory Authority of the Slovak Republic can impose a fine to the licensee if fails to comply with the Atomic Act. The sanction depends on how much has the person violated the Atomic Act and can vary between 2 million Euros and 3 320 Euros. The license holders usually comply with the Atomic Act provisions or duties imposed by the Nuclear Regulatory Authority in the decisions. That is the reason why the regulatory body didn´t have to start any proceedings against the licence holders not only in 2009 but also in 2010. The sanctions are not imposed very often, in fact, they are quite rare, but if they are it is mostly because the approved documentation was not adhered.

Q.No	Country	Article	Ref. in National Report
35	Hungary	Article 11.2	4.2.4, p.72

Question/ Comment For year 2009 the budget breakdown UJD contained a determined total number of employees of 89, of which 72 are civil servants and 17 employees working in public interest. Structure of UJD SR employees by profession as at 31 December 2009 is given in fig. 4.2.3.

Q:Are you planning to improve the number of employees of the UJD, in connection to the planned new reactors in Bohunice?

Answer The increase in staffing during the last period is due to the licensing of Mochovce 3&4. The comparision with STUK is not appropriate because in Slovakia there is experience with this type of NPP.

Capabilities of the regulator – UJD (human resources)					
Development of human resources					
Number of Employees	**1993**	**1998**	**2005**	**2009**	**2011**
	39	**81**	**81**	**89**	**93**

In public interest are performing following activities- accounting, budget, implementation of payment by the Treasury, public procurement, contracting, financial control, administration of State Property, registry reports, informatics, public information and secretarial activities.

Q.No	Country	Article	Ref. in National Report
61	Hungary	Article 16.1	4.7.2.2 p.96-98

Question/ Comment "UJD has set up an emergency Staff from among its employee specialists and other employees to work within the ERC. The main functions of the Emergency Staff are to:
- analyze the state of a nuclear installation in case of an occurrence,
- make forecasts on the evolution of an occurrence - accident or an accident and radiological impacts on the public and the environment,
- propose recommendations on public protection measures and refer them to the CCS, the appropriate local offices in the region seat and other authorities concerned,- ..."

Q: Could you detail how do you analyze the accident? Which kind of information and analysis tools are used?

Answer UJD emergency organization is divided into four groups. Two groups of them deal exclusively with analysis of the accident and situation assessment. Initial analysis belongs to the so called “Reactor safety group”. The group consist of technicians with high level knowledge concerning NPP and reactor technology. This group has all necessary data on line, if not on-line, then by other communication lines (phone, fax). Also critical safety functions are received. Based on data received and with support of manuals with some 60 pre-calculated event scenarios they are able to find out what happened, what is probably the extent of damage and what kind of source term would result from given accident. The source term is forwarded to the second group. Besides the group can use also codes SPRINT and ESPRO for determination of source term.

The role of the second group, so called “Radiation protection group” is to assess the radiological situation and forecast its development. They have on line data from monitoring and measurements as well as actual meteorology on-line data available. Using computer code RTARC the group is able to assess the radiological situation up to some 40 km from the NPP and also there is possibility to make forecast of situation development. The calculations can be repeated in short intervals in case when situation changes (source term, meteorology). More detailed assessment of radiological situation can be made with the help of RODOS computer code. RODOS is particularly very useful in the intermediate and late phase of the accident, has many outputs concerning radiological situation and provides also a menu of arrangements and countermeasures to mitigate consequences and protect the population, property and environment, so it is a powerful mean for decision making.

JAPAN

Convention on Nuclear Safety
Questions Posted To Slovakia By Japan in 2011

Q.No	Country	Article	Ref. in National Report
21	Japan	Article 8.1	Sec.1; p53

Question/ Comment Slovakia report says “As at 1 May 2010 UJD employed 87 employees, of whom 70 were civil servants and 17 employees are performing work in public interest.”
What works does UJD is performing in public interest?

Answer In public interest are performing following activities- accounting, budget, implementation of payment by the Treasury, public procurement, contracting, financial control, administration of State Property, registry reports, informatics, public information and secretarial activities.

Q.No	Country	Article	Ref. in National Report
22	Japan	Article 8.1	Sec.2; p54

Question/ Comment Slovakia report say “In 2002 a process oriented internal quality management system was introduced with the aim to achieve more effective and more efficient fulfillment of its tasks.”
Are there any effective results generated by the internal quality management system?

Answer The improved process oriented management system was introduced in our organization in such a way that led us to define our tasks more specifically, which at the same time means more efficiently, i.e. working on more particular purpose for a more particular reason, which gave us ability to produce required results more effectively, i.e. in a way that is successful and achieves that what the regulator (UJD SR) have to do.
As a result of these improvements UJD SR are able to reach more effective results in many of our standard processes, e.g. in following processes: - internal normative management acts development; - documentation assessment; - inspection activity; - non-conformances and control of corrective measures; - internal audit performance; and - quality system effectiveness self-assessment.

Q.No	Country	Article	Ref. in National Report
70	Japan	Article 18.1	Sec.5.2.1; p111

Question/ Comment Concerning the procedure of design and construction, how do you proceed the licensing of design and construction based on the related regulation?

Answer The first “Preliminary Safety analysis Report of NPP Mochovce, units 3 and 4” was elaborated in 1984 and 1986. Licensee submitted an up-dated PSAR for UJD on the basis of present legal requirements. Changes in “Preliminary Safety Analysis Report of NPP Mochovce, units 3 and 4” was approved by the UJD decision No. 267/2008.
Further information in the chapter 2.3.5, page 37 of the National Report.
Nowadays UJD continuously approves documentation for classified equipments (more than 2000 documents) in compliance with UJD Regulations Nr. 50/2006 and No. 56/2006.

LITHUANIA

Convention on Nuclear Safety
Questions Posted To Slovakia By Lithuania in 2011

Q.No	Country	Article	Ref. in National Report
23	Lithuania	Article 8.1	3.1.3, p.51

Question/ Comment Could you describe in more detail the distribution of functions (competencies) between Nuclear Regulatory Authority of the Slovak Republic and Public Health Authority of SR regarding the safety of nuclear installations?

Answer Since, in the end-effect, the regulation of nuclear safety by determining safety requirements on technological equipment and operation of nuclear installations is based on the requirements related to health protection and vice versa, the cooperation of ÚJD and the Ministry of Health of SR is important, as they are complementary. ÚJD and MZ SR made an agreement whose objective is the coordination of regulatory activities and provisions for the complementarity of regulation. A joint commission on issues of common interest was established under this agreement.

Q.No	Country	Article	Ref. in National Report
29	Lithuania	Article 10	26

Question/ Comment "The "Safety Culture" course is a compulsory element of programs for position-specific training and proficiency support program for all industrial & operational personnel of NPPs. 100 % of industrial & operational personnel of all categories are involved in the training."
Why not all personnel of NPPs?

Answer A license holder has a system of QA the integral part of which is also a safety culture. In this frame all staff member participate on basic instruction concerning safety culture. The staff having influence on nuclear safety has a specialized and periodical trainings on safety culture.
Note: The reference, as indicated above could not have been found in the National Report.

The personnel of all nuclear sites and also personnel of the headquarters involved in nuclear activities will receive training in Safety Culture area since the year 2011 within Performance Excellence Initiative launched in SE, a. s. company.

Q.No	Country	Article	Ref. in National Report
30	Lithuania	Article 10	4.1.2, p.65

Question/ Comment Is stated "To achieve safety goals the main safety requirements and principles of nuclear safety and radiation protection are set: (third bullet) In all activities relating to nuclear installations principles of safety culture apply."
How application of Safety Culture Principles in all activities relating to nuclear installations is estimated?

Answer SE, a. s. has adopted the application of the Safety Culture on the base of principles as required by WANO Guideline 2006-02 - Principles for a Strong Nuclear Safety Culture. This was reflected in the Company`s Safety Policy and incorporated into the directive SE/SM -134 Safety Culture (entered into force on 15-th January 2010). In the directive responsibilities and procedures in applying eight SC principles in all the activities at nuclear installations are defined. Responsibilities for the SC are determined by the hierarchical level from the Director General level to the level of employees. The activities related to the management, assessment, monitoring, communication and education of SC is described in the directive itself and follows the instructions SE/MNA-134.01 Assessment and Monitoring of SC and SE/MNA-134.02 Safety Culture Enhancement Tools. Company management reviewes at regular intervals, whether the requirements in conjunction with SC principles are applied in the nuclear power plants real life. If some problems are identified corrective measures are taken. These are incorporated into the SC Action Plans.

Q.No	Country	Article	Ref. in National Report
31	Lithuania	Article 10	4.1.2, p.65

Question/ Comment (4, 5 bullets) “Systems and components having relevance from the safety aspect are tested on a regular basis, with the aim to verify their functionality and operability. Safety audits of individual safety systems are carried out periodically.”
What is the difference between these two items? Please provide approximate scope of the 5th item and how often such audits are performed for one safety system?

Answer The difference between testing of safety systems and components according to Limits and Conditions and internal safety audits according to methodical guide SE/MNA-124.01 –Audits of Integrated Management System are in scope.
Internal safety audits: fulfilment of requirements of basic safety documents, documents of UJD SR.

Internal safety audits:

- safety systems
- emergency planning,
- preparation of operational personnel/ operators/
- health measurement,
- current of operation and design documentation,
- correction action programme

The periodicity of internal safety audits for example safety systems- high pressure safety injection system is specified for each three years - SE/MNA-124.01.

Q.No	Country	Article	Ref. in National Report
45	Lithuania	Article 13	4.4.3, p.81

Question/ Comment It is stated in the report that the integrated management systems of the nuclear operators are procedurally oriented.

a) How is the process-based approach implemented according to the international requirements and recommendations (IAEA GS-R-3, GS-G-3.1, GS-G-3.5, ISO 90017 14001)?

b) Is it the regulatory requirement that the licensees shall have their integrated management system certified?

Answer **a)** All relevant requirements of national legislation (Atomic Law, etc.), requirements of IAEA documents, ISO standards 9001, 14001, OHSAS 18001 and other requirements of involved parties have been analyzed and adequately implemented.
UJD SR performs regular inspections on yearly basis. The IMS have been certified by accredited certification body (Bureau Veritas Slovakia, s.r.o.) in June 2010. The schedule of supervisory audits is stated and approved for next two years.

SE, a. s. has implemented a set of processes (covered by SE, a.s. Process Model), in which the process sponsors, process owners (including their roles, responsibilities and authorities), structure of documentation, KPIs for relevant processes, etc. are established and maintained.
The key processes (production, sales/trade) and selected supporting processes (for example „Human resources management“) are continuously monitored and measured, data are regularly collected and analyzed.
Information about the IMS effectiveness and efficiency are submitted to the SE, a.s. top management through regular reports (management review, evaluation of SE / functional goals, KPIs, etc.).

b) Slovak atomic act writes: The authorisation holder shall be liable to establish the organisational structure, procedures and resources necessary to assure the quality of nuclear installations (hereinafter referred to as “quality system”). - chapter 4.4.1 of National report. The licensee is obliged to have a management system, but it doesn´t need be certified.

Q.No	Country	Article	Ref. in National Report
55	Lithuania	Article 15	4.6, p.89

Question/ Comment No information is provided on implementation of radiation protection measures. Absence of data on personal dose for workers, effluents monitoring (gaseous and liquid discharges) makes it impossible to evaluate compliance to the requirement “that no individual shall be exposed to radiation doses which exceed prescribed national dose limits.”

Answer Please see answers to questions No. 50, 51.

Q.No	Country	Article	Ref. in National Report
75	Lithuania	Article 19.1	5.5.3, p.115

Question/ Comment It is stated “Specialized departments are constituted at the respective power plants for management of operational documentation. Its main tasks include: …organize approval of operational documentation”
- It is not mentioned in the report that there are processes for verification and validation of the procedures.
- Do you have requirements for verification and validation of the procedures?
- If you have such requirements, are there any verification and validation guidelines?

Answer Requirements for verification and validation of the operating procedures are included in the following management documentation:
- EBO/MNA-311.02 - Operating Documentation Management (for nuclear power plant Jaslovské Bohunice)
- EMO/MNA-311.02 - Operating Documentation Management (for nuclear power plant Mochovce)
According to those documents, after the implementation of a change related operating regulations must be always updated. All operating regulations are verified by sponsors of single documents every 3 years.

Q.No	Country	Article	Ref. in National Report
76	Lithuania	Article 19.1	5.3.3.1, p.116

Question/ Comment Is stated “Organizational and operational documentation which deals with the organization of operation and operation of the units proper under nominal and non-nominal conditions. It consists, e.g., of:”

There is no evidence that there are special alarm response procedures (ARPs). Does it mean that they are not necessary?

Answer "Alarm response procedures" are issued in both nuclear plants in which the activities of the operator are described step by step. These procedures belong to the group Regulations for abnormal operation.

Q.No	Country	Article	Ref. in National Report
77	Lithuania	Article 19.1	5.3.3.4, p.118

Question/ Comment “The Severe Accident Management Program (SAMP) is currently underway at NPP V-2 to implement the plant defined hardware modifications necessary to perform SAMG. An update, and introduction of, SAMG in the Technical Support Centre is dealt with under the project. SAMG are expected to be developed at NPP V-2 in 2012 and after personnel training put into practice in 2013”.

It is mentioned above that there are symptom-based regulations for emergency conditions (the so-called PHP). Are there any plans to harmonize PHP with severe accident management guidelines (SAMGs) in the future?

Answer Yes, in PSR there is a task:

- to prepare technical and organisational conditions for the staff training for the transition from PHP to SAMG
- to establish the SAMG group within the technological division of the emergency commission, to prepare and to perform special training and excercise of the transition from standard operative procedures to SAMGs.

PAKISTAN

Convention on Nuclear Safety
Questions Posted To Slovakia By Pakistan in 2011

Q.No	Country	Article	Ref. in National Report
3	Pakistan	General	General

Question/ Comment How are the best practices and lesson learned from the under construction projects are being managed and retained/used for feed back?

Answer On the base of ref. document INPO 08-005: 2008 **"Historical Construction Experience to Apply to New Plant Deployment"** an opinion pool among MO34 Project managerial personal was carried out to identify weak areas of MO34 Project. One of the most taken important preventive actions was selection all contractor's site senior managers and foremen with the purpose of increasing their awareness about owner requirements related to MO34 units construction. At the end of the 2010 year have been launched periodical special extended training block for contractor's people with applying final questionnaire for verification their knowledges.

In November 2009 the practice of MO34 commissioning staff personal started with the aim to familiarize them with chosen applicable WANO Event Reports which were happened in the world during commissioning phase of NPPs construction. There were presented following reports, e.g.:

EARATL90025V/ EARPAR90041V / EARMOW03014V /EARMOW99024V/
EARMOW00017V/ EARATL89028V/ EARATL 89024V/ EARATL90010V /MERMOW08013V /EARMOW90002V/ EARPAR98012-1 …...etc.

Q.No	Country	Article	Ref. in National Report
12	Pakistan	Article 6	Section 2.1.1, Page 18

Question/ Comment We will appreciate if Slovakia may inform us whether they have utilized international operating experiences of decommissioning and may share with us few examples of such experiences.

Answer In 1999 the Slovak government decided to shut down the first unit in 2006 and consequently decommission two units of V1 NPP (VVER type with R 230 nuclear reactors). Whereas Slovakia did not have enough own experience with VVER type NPP decommissioning at that time the decision has been taken to involve experienced international consultant in the decommissioning conceptual engineering and licensing issues. Taking into account available financial and human resources, site conditions and intended future use of the site, and energy strategy, it was decided for immediate dismantling option and decommissioning to brown field (future industrial use of the site) of V1 NPP. Based on this decision operator in co operation with the consultant (consortium of French and Spanish companies experienced in decommissioning of NPPs) has elaborated for the V1 NPP the following strategic documents:

Conceptual Engineering of the Physical Modifications report identifying necessary modification of V1 NPP systems and operational

documentation to be implemented during pre-decommissioning stage.

Bohunice V1 NPP Decommissioning and Historical Waste Management Strategy report identifying radioactive waste management strategy and recommendation for waste management technologies necessary for treating, conditioning and storing/disposing of historical and decommissioning waste.

Taking into account those strategic documents and the consultant's experience with the NPPs decommissioning **The Bohunice V1 NPP Decommissioning Strategy** has been elaborated by the operator with support of the consultant. Based on those conceptual documents the decommissioning projects portfolio has been developed in the area of pre-decommissioning plant modifications, decommissioning licensing documentation, radioactive waste management and plant dismantling.

As an example the following V1 NPP decommissioning projects have been implemented by the international suppliers before the decommissioning license issue (scheduled in 2011):

- **The V1 NPP Conceptual Decommissioning Plan**. The experience of the Greifswald NPP of the same type decommissioned in Germany has been utilized.
- **The Environmental Impact Assessment Report of V1 NPP** in decommissioning stage. The experience of the Greifswald NPP has been used.
- **Bohunice V1 NPP Decommissioning Licensing Documentation for first stage** of the V1 NPP decommissioning. The experience of the British company VT Nuclear Services (Babcock Nuclear Limited) in the decommissioning field has been implemented.
- **Feasibility Study of Enlargement of the National Radioactive Waste Repository** for intermediate and low level waste. Four alternatives have been discussed in the document including Very Low Level Waste repository alternative. The experience of the Spanish and German companies in radioactive waste management field has been implemented.
- **Decommissioning Database –** Consortium led by Energiewerke Nord GmbH, Germany, has been contracted by JAVYS, a. s. and is elaborating the physical and radiological inventarization of decommissioned V1 Nuclear Power Plant in Slovakia.

Refurbishment of the Radiation Protection Monitoring Equipment – Canberra Packard Central Europe GmbH, Austria, has been contracted by JAVYS, a.s. and is pursuing above mentioned project. This project aims at the identification and replacement of obsolete radiation monitoring equipment within V1 NPP by new one which will meet the modern standards and serve the actual decommissioning needs of JAVYS, a.s. (provision of portable monitoring devices and radiation monitoring systems).

Q.No	Country	Article	Ref. in National Report
14	Pakistan	Article 7.1	Section 3.1.1, Page 44

Question/ Comment As per information provided in the national report of Slovak Republic, UJD and MHV SR are both involved in regulating nuclear fuel cycle activities. We request Slovak Republic to inform us about their respective domains of activities.

Answer The Nuclear Regulatory Authority of the Slovak Republic (UJD) provides for (inter alia) state regulation over nuclear safety of nuclear installations, including the safety of radioactive waste management and spent fuel management and other phases of fuel cycle.
The Ministry of Economy and Construction of the Slovak Republic is a central body of state administration (inter alia) for nuclear energy, including nuclear fuel management, radioactive waste management, prospecting and exploration of radioactive materials and mining, and licensing of export of special materials and equipment as dual use goods.

Q.No	Country	Article	Ref. in National Report
24	Pakistan	Article 8.1	Section 3.1.3.3 , Page 55-57

Question/ Comment Slovakia may please describe the system for inspection and assessment during different phases of nuclear installation.

Answer System for inspection is prescribed in internal directive where is established a unified procedure for performing inspection activities. Inspection master plan of ÚJD SR is developed for period of one year. Basically inspections during the lifetime of NPP performed by inspectors of UJD SR and devided into planned and unplanned. In second level inspection are divided on routine, special and team inspections. Inspections are performed according to inspection manuals or special program that is created before start of inspection.
During construction phase of NPP inspection are focused on observance of technological discipline, inspection for proper fabrication(including welding) and cleanness, verification that the structures, systems and components has been constructed in accordance with approved design requirements and specifications and inspection on fulfillment plans of quality during manufacturing and fabrication of selected equipments.
Inspection during commissioning are focused on meeting of the approved commissioning programs, inspection of individual tests, pre-operational test of systems and components, results of pre-operational tests, cold and hot hydraulic tests, tightness and strength control of primary circuit, tightness of hermetic area, physical protection of NPP and fulfillment of the applicable requirements in respect of safeguards, preparedness and training of operational personnel, preparedness of operational procedures, instructions, EOPs and SAMGs, main administrative procedures, management structures of the plant, quality assurance program for all commissioning, operation and maintenance activities, arrangements for periodic testing, maintenance, inspection and surveillance, arrangements for control of plant modifications, preparedness of records and reporting system, emergency preparedness, preparedness of systems and equipments to fuel loading and subcritical tests, observance of limits and conditions, at the end of fuel loading, the position of each core element in

reactor core, initial criticality, physical and power tests and trial operation. Inspection during operation are focused on meeting of approved limits and conditions, state of selected equipments, qualification and training of NPP personnel, meeting of operational procedures and instruction, observation of periodical tests of systems and components and meeting of conditions of nuclear safety.

Q.No	Country	Article	Ref. in National Report
36	Pakistan	Article 11.2	Section 4.2.3, Page 68

Question/ Comment Can Slovakia provide the measures considered in the assessment and Updation of training program in response to design modifications, events, operating experience feedback etc?

Answer There is a regular update of training programs related to design plant modifications and in-house or worldwide operation experience.
On short term basis mainly the retraining programs for periodic shift crews trainings (conducted three times a year) are updated. On long term basis also the initial and continuing training programs are updated. This covers initial and continuing theoretical training programs conducted by contractor and on-the-job training programs conducted by the plant.

Q.No	Country	Article	Ref. in National Report
37	Pakistan	Article 11.2	Section 4.2.4, Page 71

Question/ Comment Reference to section 4.2, subsection (4.2.4), please clarify what kind of training courses being conducted at UJD for the competency development of its technical staff?

Answer UJD has its own training system, annual training plan and onsite intranet CBT – training courses based on a special software for a self-study of the technical staff.

Q.No	Country	Article	Ref. in National Report
38	Pakistan	Article 11.2	Section 4.2.4, Page 71

Question/ Comment Reference to section 4, subsection (4.2.4), Can Slovakia clarify if there is any in-house training department in UJD for the training of its technical personals.

Answer UJD has its own training system, annual training plan and on-site intranet CBT – training courses based on a special software for a self-study. For example: In-house training for inspectors is based on best practices and experience. Instructors are selected from best inspectors of UJD. UJD Department of Emergency Preparedness, Informatics and Personnel Training organizes the preparation and training of technical staff.

Q.No	Country	Article	Ref. in National Report
41	Pakistan	Article 12	Section 4.3, Page 73-76

Question/ Comment Is there any programme for “fitness for duty” of plant personnel at Slovakian NPP?

Answer Yes, there is an official program related to fitness for duty – mainly focused on checks on use of alcohol. Any person entering the site can be asked by security to pass the alcohol test. In addition the managers at the site including the shift supervisor can ask the individuals to pass the alcohol test. There is a clear procedure how to proceed when positive test results are measured.

Q.No	Country	Article	Ref. in National Report
56	Pakistan	Article 15	Section 4.6, Page 89

Question/ Comment What measures have been taken by the operating organization to ensure the implementation of ALARA principle?

Answer For the year 2009 no changes in comparison to the 2008.

Q.No	Country	Article	Ref. in National Report
57	Pakistan	Article 15	Section 4.6.2, Page 91

Question/ Comment Slovakia may please provide comparison of doses of plant personnel during the reported period.

Answer

Occupational exposure of workers are:	*An averaged effective dose of 20 mSv per year*
	An effective dose of 50 mSv per year while effective dose over 5 years may not exceed 100 mSv
	An equivalent dose to the lens of the eye of 150 mSv in a year
	An equivalent dose to the extremities (hands and feet) or the skin50 of 500 mSv in a year
For occupational exposure of apprentices of 16 to 18 years of age, the dose limits are:	*An effective dose of 6 mSv in a year;*
	An equivalent dose to the lens of the eye of 50 mSv in a year;
	An equivalent dose to the extremities or the skin50 of 150 mSv in a year.
Pregnant woman dose limit:	*An equivalent dose to the abdomen area of 1 mSv in a whole pregnancy;*
The dose limits for members of the public are:	*An effective dose of 1 mSv in a year;*
	An equivalent dose to the lens of the eye of 15 mSv in a year;
	An equivalent dose to the skin of 50 mSv in a year.

- the individual dose distribution for workers per year,

2009

Collective dose (manmSv)	EBO	EMO	*Individual dose distribution*	*EBO*	*EMO*
January 2009		4,438	*Dose in interval (5;10> mSv*	*0*	*2*
February 2009	4,455	1,804	*Dose in interval (10;15> mSv*	*0*	*0*
March 2009	5,617	8,489	*Dose in interval (15;20> mSv*	*0*	*0*
April 2009	2,559	188,505	*above 20 mSv*	*0*	*0*
Mai 2009	1,671	197,66			
Jun 2009	0,56	2,023			
Jul 2009	126,514	0,737			
August 2009	3,161	3,155			
September 2009	107,193	27,434			
Oktober 2009	12,218	56,779			
November 2009	0	2,28			
December 2009	2,567	0			

- the evolution of the individual dose distribution per year since 2003,

EMO

Collective dose (manmSv)

Year	2003	2004	2005	2006	2007	2008	2009
EMO both units	436,33	451,66	759,43	468,909	318,598	308,603	493,3

Number of monitored workers

Year	2003	2004	2005	2006	2007	2008	2009
EMO both units	1664	1669	1600	1578	1626	1686	1778

Maximum individual dose (mSv)

Year	2003	2004	2005	2006	2007	2008	2009
EMO workers	6,69	4,94	5,55	1,099	4,703	1,446	4,908
Contractors	4,57	5,64	9,74	7,799	4,829	3,836	5,77

Individual dose distribution
EMO

Year	2003	2004	2005	2006	2007	2008	2009
Dose in interval (0;5) mSv	1661	1659	1581	1576	1626	1686	1776
Dose in interval (5;10> mSv	3	5	19	2	0	0	2
Dose in interval (10;15> mSv	0	0	0	0	0	0	0
Dose in interval (15;20> mSv	0	0	0	0	0	0	0
above 20 mSv	0	0	0	0	0	0	0

EBO

Collective dose (manmSv)

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	967,338	742,446	1063,771	471,914			
V-2 (EBO)	436,99	476,798	493,282	676,886	608,215	561,13	266,515

Number of monitored workers

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	1781	1656	1711	1577			
V-2 (EBO)	2082	2290	2345	2353	2138	1994	1508

Maximum individual dose (mSv)

Year	2003	2004	2005	2006	2007	2008	2009
V-1 (EBO)	9,716	7,121	14,316	6,203			
V-2 (EBO)	4,506	6,181	8,384	11,816			
EBO workers	10,423	10,72	13,073	1,429	1,683	1,692	4,553
Contractors	11,275	7,317	14,442	11,816	15,249	9,711	2,482

Individual dose distribution

V-1 (EBO)

Year	2003	2004	2005	2006
Dose in interval (5;10> mSv	26	7	25	3
Dose in interval (10;15> mSv	0	0	2	0
Dose in interval (15;20> mSv	0	0	0	0
above 20 mSv	0	0	0	0

V-2 (EBO)

Year	2003	2004	2005	2006	2007	2008	2009
Dose in interval (5;10> mSv	0	5	6	11	17	9	0
Dose in interval (10;15> mSv	0	0	0	1	4	0	0
Dose in interval (15;20> mSv	0	0	0	0	1	0	0
above 20 mSv	0	0	0	0	0	0	0

- Technical measures which are or will be implemented in order to reduce the effective individual and collective dose?"

Organizational measures: decreasing of internal plant exposure limits for „general order“ and specific activities.

Technical measures: chemical regime during shutdown, coolant cleaning during shutdown, filtration of the coolant pressure vessel and spent fuel pool.

Q.No	Country	Article	Ref. in National Report
62	Pakistan	Article 16.1	Section 4.7

Question/ Comment Can Slovakia describe what kind of arrangements are in place for under construction NPPs to cope with the emergency situations at operating power plants?

Answer UJD Decree No. 55/2006 on Emergency Planning for the Event of an Incident or an Accident deals with this issue. It is set down that a preliminary on-site emergency plan has to be established during the construction of any nuclear facility. This plan has to consider all potential risks, which could occur during the construction. If the facility should be built in neighbourhood this fact is taken into account by the appendix to the Decree No. 55/2006.

Q.No	Country	Article	Ref. in National Report
67	Pakistan	Article 17.3	Section 5.1.2, Page 107

Question/ Comment Can Slovakia provide detail of the works being carried out in civil structures related to seismic upgrade?

Answer Within the EBO 3,4 modernisation program all safety related buildings have been enforced in seismic way to newly required seismic data.

Q.No	Country	Article	Ref. in National Report
79	Pakistan	Article 19.7	Section 5.3.5, Page 119

Question/ Comment What mechanism is in place for dissemination of information from evaluation and investigations of abnormal events as well as international operating experience feedback?

Answer The operator uses international informative systems on operational experience from nuclear energy (WANO and IAEA) to apply measures from analyses of events of other NI for its own unit and also to pass his own experience to other operators. The aim of this activity is to eliminate repetition of the same events by implementation of preventive measures.

The procedure of processing and using information about events at other NI is described in detail in the relevant documents of the operator.

In SE,a. s. there is a system of using experiences from operational events (OE)at own units. In the system also experience from foreign NPPs are monitored and used, obtained through the networks IRS, WANO, INPO and from the operator CEZ from the Czech Republic.
SE, a. s. implemented a SNAP (system of correction and prevention) process, which ensures the investigation of causes of operational events, taking corrective actions and monitoring their implementation. All reports containing analyses of the causes of events are reviewed periodically by managers at the meeting of the Committee of SNAP (an advisory body to the plant director). The SNAP Committee approves corrective measures, imposes their implementation and monitors the performance of corrective measures. The SNAP Committee also defines what specific groups of employees should be familiar with relevant lessons from the individual events. Then the staff are familiarized with the results of the investigation of events at the regular training days. In addition, all reports of investigations of events are available to employees in the computer network.
Internal and external operating experience (OE) is disseminated in accordance with previous categorization based on WANO and INPO recommendations. The categorization is performed by OE corporate group separately for each NPP. Selected OE is evaluated, passed for information only or entered into storage only for future usage, respectively. There are two levels of evaluation – mandatory and routine – with separate requirements for range and depth. OE for evaluation or information is only passed to the assigned representative of related department – OE department coordinator, in the most cases executed by the department manager. He assignes the evaluator and decides on the form to inform of his staff. Other information only channels used when event meets criteria are passing information to relative experts directly,

OE transformation into noticeboard presentations, brief information presentation via large square screens placed at NPPs or incorporation into JITs. Also external OE are regularly communicated via corporate prints. Events are also utilized as sources for various personnel training programs. Based on the event character OE corporate group proposes immediate or normal preventive actions. Immediate preventive actions are implemented via corrective actions programme. Issues are addressed next working day by plant managers. Normal preventive actions are defined in operating experience utilization report. These actions are discussed and addressed by plant management within monthly held Corrective Actions Review Board (CARB). Preventive actions implementation overview is performed by OE corporate group and implementation state is reported to plant management via CARB.

SLOVENIA

Convention on Nuclear Safety
Questions Posted To Slovakia By Slovenia in 2011

Q.No	Country	Article	Ref. in National Report
15	Slovenia	Article 7.1	p.47,51

Question/ Comment The existing limits of operator's financial liability for nuclear damage are rather low regarding legislation in other EU States and also regarding both revised Conventions in this field (Paris and Vienna).
Can you explain the foreseen new limits for nuclear damage? Can you explain whether all operators are obliged to maintain insurance (or other financial security) or are there any exceptions (e.g. State owned installations, research reactors, radwaste facilities….)?

Answer The Nuclear Regulatory Authority established an Inter-departmental working group in order to be in charge of drafting an independent Act on Civil Liability for Nuclear Damage in 2008. Since 2009 the legislative process of adopting the Act in question was underway in accordance with the national regulations of the Slovak Republic. The Act proposed the limit for liability with regard to nuclear facilities for energetical purposes amounting to 300 mil. EUR and with regard to transportation and non-energy facilities to 150 mil. Eur. In September 2010 a bill was ready to be submitted, as required by valid legislation of the Slovak Republic, in order to be negotiated in the Legislative Council of the Government, acting as an advisory body of the Slovak Government. This body, however, has expressed its disapproval with having a separate Act on Civil Nuclear Liability Matter and recommended to include the issue of liability in the existing Atomic Act. Given such recommendation the Nuclear Regulatory Authority will aspire to incorporate the limits of liability at the amount of 300 mil. EUR (for power applications) and 150 mil. EUR (for non power applications and transport) in 2011 into the existing Atomic Act or to the completely new Atomic Act.

According to the present provisions of nuclear liability limits every license holder shall ensure the coverage of liability with no exception and this shall be done in the form of insurance or other financial security. Nuclear events caused by small quantities of nuclear materials and radioactive waste, in case of which no nuclear damage is assumed, are exempt from the liability coverage. The maximum limits shall be designated by decree issued by the Nuclear Regulatory Authority.

UKRAINE

Convention on Nuclear Safety
Questions Posted To Slovakia By Ukraine in 2011

Q.No	Country	Article	Ref. in National Report
4	Ukraine	General	page 24

Question/ Comment Was is the power uprate as compared with the original design agreed with the OKB “Gidropress”?

Answer In October 2005 a power uprate of V-2 units (ZVB V-2) was started. A contribution of 122 MWe for the EBO site was achieved.
Increase of reactor heat output at EMO from 1375 MWth to 1471 MWth was realized starting with refueling 10 of unit1 and refueling 9 at unit 2. Due to the increase of reactor heat output new safety analyses were made in the extent required by the law No. 541/2004, UJD decree No. 50/2006 and guide No. BNS I.11.1/2006. In accordance with legal requirements the safety analyses were extended by beyond design accidents, severe accidents and accidents at shut down reactor.

Q.No	Country	Article	Ref. in National Report
5	Ukraine	General	Para 5.3.5.3 page 125

Question/ Comment Since 2006, the number of operational events decreased and there was no increase. In 2009, the number of operational events abruptly increased, by more than two times. What is the cause for this abrupt increase in the number of operational events?

Answer In the end of the year 2008 an event with the impact on the serviceability of the same valve of the low-pressure emergency system was registered consequently in all three independent systems. The event was ranked at the INES 1 level. After this event a large-scale training of the staff and communication campaigns were performed aimed at expectations of the management concerning the notification of problems on valves of safety systems. In the next year the marked increase of the number of staff’s notifications of problems of the valves of safety systems was registered, as for example slow movement in opening/closing valves. 50 % of the total number of 34 notified events in 2009 were related to just those problems.
Based on those events systemic measures were taken for the management of the reliability of safety system valves (with the aid of specialists and INPO programmes the programme „Motor Operated Valves” has been implemented). The effectiveness of the programme was demonstrated in the next year.

Q.No	Country	Article	Ref. in National Report
42	Ukraine	Article 12	Para 4.3.3, page 76/140

Question/ Comment Which indicators do you use for safety culture assessment?

Answer In the Slovenské elektrárne Company are used several tools to assess the Safety Culture (hereinafter referred to as SC) for nuclear power plants. These tools are:

Self-assessment with using of SC Indicators (hereinafter referred to as SCI), a questionnaire survey of perception of SC by employees and independent assessment carried out by the way of SC review (organized by its own staff and by Nuclear Oversight department) and international assessments (at regular intervals of two years).

In relation to the question of SCI, which are used for SC assessment, these are established at the plant level and departmental level. SCI are selected and designed to represent the attributes of eight Strong SC principles defined by INPO (or WANO - according to the WANO Guideline 2006-02 Principles for a Strong Nuclear Safety Culture). SCI are evaluated quarterly and are part of the regular Continuous self-assessment reports of Nuclear power plants and departmental self-assessment reports.

UNITED KINGDOM

Convention on Nuclear Safety
Questions Posted To Slovakia By United Kingdom in 2011

Q.No	Country	Article	Ref. in National Report
16	United Kingdom	Article 7.1	Page 48 Section 3.1.2.2

Question/ Comment The report refers to “generally binding legal regulations” issued by UJD. Could the Slovak Republic please clarify what is meant by “generally binding”? Does the Atomic Act give UJD the authority to act on its own to issue regulations or does UJD need to consult with other parties?

Answer According to the Constitution „Ministries and other state administration bodies shall, under the laws and within their limits, adopt generally binding legal regulations provided they are empowered to do so by a law. These generally binding legal regulations shall be promulgated in a manner laid down by a law.” „Generally binding regulation” means that the regulations are binding for all physical legal and persons. However, the regulation can be issued only based on corresponding law which has to provide for the possibility to issue them. Each law has to contain mandate to issue such regulations. The regulations can´t administrate the relations, which go beyond the mandate of the law. They are also called “executive regulations” because they execute the law itself.

As far as legislative procedure is concerned, the mandate to issue such regulations is given directly by the constitution. The legislative procedure stipulates that before the legal act is approved by the government and the National Parliament, it has to undergo Interdepartmental notification and comments procedure. This means that every legal act which is intended to be binding in future has to be assessed by other ministries and state bodies. These bodies comment on them and their comments must be discussed and negotiated. After the bill is approved by the National Parliament, it is published in the collection of laws. The binding act in this field is Act. no. 1/1993 Coll. on Collection of laws, which stipulates, that the act enters into force on the fifteenth day after it has been published in the Collection of laws. The act stipulates also some exceptions, e.g. the act can come into force either the same day it has been published or even later than the fifteenth day. These facts must be included in the act itself. Irrefutable legal assumption stipulates that everything that has been published in collection of laws is known to everyone and no one can claim otherwise.

Q.No	Country	Article	Ref. in National Report
17	United Kingdom	Article 7.1	Pages 44 - 51

Question/ Comment Please explain how the legislative and regulatory framework provides for a system of licensing. In particular who is the licensing Authority and what is the process that an operator must pursue to obtain a licence? For what period are licences issued? Other parts of the National report refer to authorizations, construction permit and consents. Are these different to a Nuclear Site licence? (see also UK question 3 on Article 8)

Answer The Nuclear Regulatory Authority of the Slovak Republic is the only body which grants consents and authorisations to the applicant. Consent is

granted for sitting. Authorisation is granted for the following activities:
a) construction of nuclear installation,
b) commissioning of nuclear installation,
c) operation of nuclear installation,
d) decommissioning stage,
e) closure of repository and institutional control,
f) management of radioactive waste or spent fuel,
g) management of nuclear material at nuclear installation,
h) imports or exports of nuclear material,
i) imports and exports of special material and equipment in accordance with the special regulation,
j) shipment of radioactive material, including international shipment,
k)professional training of authorisation holder employees pursuant to letters b) through g),
l) re-shipment of radioactive waste,
m) imports of radioactive waste, n) management of nuclear material outside of nuclear installation.

The Authority may make any of its decisions subject to the fulfilment of conditions relating to nuclear safety, physical protection, quality assurance or emergency preparedness. The Authority may modify such conditions whenever conditions of nuclear safety, physical protection or emergency preparedness relevance, under which the original decision was issued, change, and/or based on new knowledge of science and technology, or upon justified written request or consent of authorisation holder.
The permissions are issued for the period of 10 years except the permission for professional training of authorisation holder employees which will be granted for the period of five years.
The Authorisation for construction can be also named „construction permit“, but its official name is „Authorisation for construction“. The nuclear power plant construction is administered mostly by act no. 50/1976 Coll. Building Act. The authorisation permit can be issued if the applicant to the building procedure fulfils all the conditions given by the authority. He has to submit all the safety documents necessary to be scrutinised by the building authority. List of the documentation is listed in annex 1 part B. of the Atomic Act.
For more information see National report section 3.1.3.1.

Q.No	Country	Article	Ref. in National Report
25	United Kingdom	Article 8.1	Page 52 - 53

Question/ Comment Figure 3.1.3.1 on page 52 shows the Bodies that have some input to licensing but it does not show how they interact with each other and what input these bodies have with respect to nuclear safety. Could the Slovak Republic please describe these interactions and inputs. Are there licensing hearings that involve the public? Who makes the final decision on whether a licence should be given? The text on page 53 seems to refer mainly to authorizing the initial construction of a plant. Is a separate authorisation required for operation? It is noted that the described role of the Regulatory body in section 3.1.3.3 does not appear to include licensing. Is this the case?

Answer As far as the sitting permission is concerned, the positive consent of the Nuclear Regulatory Authority of the Slovak Republic is a necessity for the District building authority to issue a sitting permission, its stamenet isn´t the final decision then. The District building authority then decides also upon a positive statement of Public health authority of the Slovak Republic and Labour inspection bodies.
The permission for construction is then issued by the Nuclear Regulatory Authority itself, but also upon positive decisions issued by the Public Health Authority of the Slovak Republic, Labour inspection bodies and other state bodies e.g. Fire Protection, Civil Protection. Nuclear Regulatory Authority is a building authority starting from the process of building (issuance of construction permission) until the process of decommissioning.
As for the authorisations, the off-site emergency plan is needed and this plan is approved by the Ministry of Interior and as for the emergency transport order is concerned, it is approved by the Ministry of Transport, Construction and Regional Development.
The public hearings with the stakeholders usually take place in order to explain all the important details which they are interested in knowing during an EIA process (e. g. siting).
The final decision whether to issue a permission or not is up to the Nuclear regulatory authority.
Yes, a separate permission is required for operation. Nuclear Regulatory Authority issues permissions for:
a)construction of nuclear installation,
b) commissioning of nuclear installation,
c) operation of nuclear installation,
d) decommissioning stage,
e) closure of repository and institutional control,
f) management of radioactive waste or spent fuel,
g) management of nuclear material at nuclear installation,
h) imports or exports of nuclear material,
i) imports and exports of special material and equipment in accordance with the special regulation,
j) shipment of radioactive material, including international shipment; such an authorisation shall not relate to carrier unless such person is at the same time the consignor,
k) professional training of authorisation holder employees pursuant to letters b) through g),
l) re-shipment of radioactive waste,
m) imports of radioactive waste pursuant,
n) management of nuclear material outside of nuclear installation.

Q.No	Country	Article	Ref. in National Report
26	United Kingdom	Article 8.1	Page 57 Section 3.1.3

Question/ Comment Can the Regulatory body apply financial sanctions to licence holders and licence holder’s employees on its own authority or does it have to refer the matter to the Courts? What other sanctions are open to the regulatory body, e.g. prohibiting operation of a plant?

Answer Yes, regulatory body in Slovakia can apply financial sanctions. It is a state body, which gives sanctions according to the Atomic Act, it doesn´t depend on the court´s decision.
Nuclear Regulatory Authority of the Slovak Republic can impose a fine to the licensee if fails to comply with the Atomic Act. The sanction depends on how much has the person violated the Atomic Act and can vary between 2 million Euros and 3 320 Euros. The license holders usually comply with the Atomic Act provisions or duties imposed by the Nuclear Regulatory Authority in the decisions. That is the reason why the regulatory body didn´t have to start any proceedings against the licence holders not only in 2009 but also in 2010. The sanctions are not imposed very often, in fact, they are quite rare, but if they are it is mostly because the approved documentation was not adhered.

Q.No	Country	Article	Ref. in National Report
27	United Kingdom	Article 8.1	Page 60 - 62

Question/ Comment Pages 60 - 62 of the national report give a comprehensive overview of the work of the Labour Inspectorate with respect to conventional safety. What role does the Labour Inspector have with respect to Nuclear Safety? Are there any conflicts between the requirements of the Labour Inspectorate and UJD?

Answer The Labour inspectorate is not in charge of the state supervision upon nuclear safety of nuclear installations. The Labour Inspectorate in general executes the supervision of all technical equipment (including NPP): pressurized equipment, lifting equipment, electrical equipment and gas equipment. NPP equipments have to meet requirements of all government regulatory bodies, i.e. requirements of the UJD and the Labour Inspectorate too.
See picture 3.1.3.1 and chapter 3.1.5 of the National report.

Q.No	Country	Article	Ref. in National Report
32	United Kingdom	Article 10	Page 64 Section 4.1.2

Question/ Comment Section 4.1.2 of the National Report describes the concept of nuclear safety.

a) Are the safety goals listed embodied in a formal written nuclear safety policy statement drawn up by SE, a.s.?
b) Does UJD carry out any inspections at the Corporate HQ of SE, a.s?

Answer

a) The basic strategic documents of SE, a. s. are „Safety Policy and Strategic Safety Plan for 2010-2014“ and they describe safety goals for four-year period.
They are official documents in written form. Every one can see them on INTRANET.
b) YES, UJD SR does. These inspections are focused on management system and safety culture.
UJD SR according to their plan of inspection executes during the year one – three thematic inspections at the Corporate HQ of SE, a. s.

Q.No	Country	Article	Ref. in National Report
33	United Kingdom	Article 11.1	Pages 68 - 71

Question/ Comment Section 4.2.3 of the National Report gives a comprehensive overview of the selection and training of NPP staff that have responsibilities for safety. Has any analysis been carried out to determine the future needs for suitably qualified and skilled staff bearing in mind possible expansion of the Slovak nuclear programme?

Answer NPP nor UJD have carried out analysis to determine the future needs for suitably qualified and skilled staff related to a possible expansion of the Slovak nuclear program. The existing analysis is suitable for WWER reactors. For future needs UJD would prepare new analysis for a case when a new type of reactor will be known.

Q.No	Country	Article	Ref. in National Report
34	United Kingdom	Article 11.1	Page 72

Question/ Comment Figure 4.2.3 shows that the total staff of UJD is 87. Is this sufficient for it to carry out its duties? To what extent does UJD use TSOs to assist it with its work? Do the terms of employment (salaries etc) for UJD staff enable it to compete with other organizations to recruit new staff?

Answer The increase in staffing during the last period is due to the licensing of Mochovce 3 / 4. The comparison with STUK is not appropriate because in Slovakia there is experience with this type of NPP.

Capabilities of the regulator – UJD (human resources)					
Development of human resources					
Number of Employees	**1993**	**1998**	**2005**	**2009**	**2011**
	39	**81**	**81**	**89**	**93**

There is a Division of safety analysis and technical support within the UJD organization structure responsible for review of safety documentation and performance of independent safety analyses including deterministic (reactor physics, thermal-hydraulics and structural analysis) as well as PSA analysis. The division numbers 7 experts. The staff is periodically re-trained in the responsible areas and involved in some research and development activities focused on the safety evaluation and development/ validation of analytical models and tools. The division is equipped with necessary analytical tools such as computer codes. This number of experts is basically sufficient for the review and assessment of documentation related to safety analyses of Slovak nuclear facilities. For specific areas, which the division has not fully covered, an external co-operation with technical organizations and domestic universities is arranged on case-by-case basis. In some cases a support from the IAEA, OECD/NEA, EK or regulatory bodies of the countries operated WWER reactors is arranged. There are no consultations on increasing or decreasing the division staff number at this time. At present there are sufficient experts available to UJD to fulfil its duties.

Q.No	Country	Article	Ref. in National Report
49	United Kingdom	Article 14.1	Page 85

Question/ Comment Section 4.5.3 states that UJD has set probabilistic goals for acceptability on system level. Would UJD make regulatory decisions based solely on the basis of probabilistic goals?

Answer No, we do not make decisions based solely on probabilistic goals. These may be used as additional support arguments and always a combined approach is used.

Q.No	Country	Article	Ref. in National Report
66	United Kingdom	Article 17.1	Page 107

Question/ Comment The response to Article 17 (siting) provides a comprehensive overview of seismic analysis carried out for Slovakia's NPPs. There is no mention however of other factors that effect siting such as demographic profiles in the vicinity of NPPs. Does Slovakia take this into account when addressing siting matters? Are there any arrangements in place to control the development of populations around NPP? Similarly are there any arrangements to control industrial developments that may pose a hazard to the NPP?

Answer Please see answer to the question 63.

Q.No	Country	Article	Ref. in National Report
78	United Kingdom	Article 19.1	Page 118

Question/ Comment Section 5.3.4 of the National Report lists tasks of the Licensees technical support and safety divisions. Are all these tasks allocated to a specific division? Are there clear instructions regarding how they should be carried out and who is responsible? Are there separate support and technical divisions at the Bohunice and Mochovce sites?

Answer In SE, the nuclear engineering unit was established, the part of which is also the safety assessment unit. Some of its activities is to ensure change management, technical support, engineering, safety assessment and designs of common solutions for both plants Bohunice and Mochovce NPPs.

UNITED STATES OF AMERICA

Convention on Nuclear Safety
Questions Posted To Slovakia By United States of America in 2011

Q.No	Country	Article	Ref. in National Report
13	United States of America	Article 6	6, 14 p Preface, 12, 37, 64

Question/ Comment The report states that the construction of EMO Units 3 and 4 is scheduled to be completed by December 2013. Please provide an update on this activity.

Answer

Annex 1

Mochovce 3-4
Main project milestones

Milestone (unit 3)	Baseline	Actual forecast
Civil readiness reactor cavity	July 2010	July 2010
Reactor pressure vessel in place	September 2010	September 2010
Cold hydro tests	May 2012	May 2012
Hot functional tests start	July 2012	July 2012
Fuel load / End of complex tests	October 2012	October 2012
First synchronization	December 2012	December 2012
PAC	February 2013	February 2013

Main milestones for Unit 3 are confirmed
Unit 4 to follow in a 8 months time span