Convention on Nuclear Safety
Questions Posted To Hungary in 2014

1.	Country Austria	Article General	Ref. in National Report General

Question/ Comment Did you already accomplish analysis of possible threats to your NPPs from extreme natural events taking into account the possible effects of climate change? Are they set as a requirement for the facilities?

Answer Q1: We have a report about the analysis of external hazards. The scope of this analysis was natural events and man-induced events. After a screening process, the non-screened hazards were selected for detailed analysis. These detailed analyses were made and also presented in the external hazards PSA report. Further investigation and analysis is in progress in this area. Nowadays the climate models are not able to forecast correctly the change in the weather in 20 or 100 years. So we prepared the extreme values of natural events with mathematical methods from the meteorological data from the last 30 years, because this data was available for the plant site. The design basis values are the extreme values of natural events with a frequency of 10^{-4}/year (that means the extreme value, that can occur in the next 10000 years), but the investigation was made for effects of natural events with a not lower frequency than 10^{-7}/year.

Q2: According to the current legislation all internal and external hazard factors shall be determined during the design of the NPPs. The following natural external factors shall be included as minimum: extreme wind, extreme temperatures, extrem precipitation (rain, snow), drougth, lighning, flooding, icy flooding, extreme cooling water temperatures, earthquake, licquefaction. Since it requires a 10 yearly reassessment of the hazard factors the periodic safety review ensures that the long term changes, like the climate change can also be taken into account and its effects are analyzed.

2.	Country Austria	Article General	Ref. in National Report General

Question/ Comment Is the safety significance of deviations from applicable current safety standards and internationally recognised good practice compiled for each nuclear installation? If so, in which intervals and are these compilations accessible to the general public?

Answer All safety significant event and deviation of the nuclear installations is compiled and recorded in a database for 30 years. Also the results of the investigations and the determined corrective actions are compiled and recorded. This information is not published but accessible to the public if so requested.

3.	Country Austria	Article General	Ref. in National Report General

Question/ Comment Is there any obligation for the licence holders to inform/consult the general public or stakeholders in the vicinity of a nuclear installations on issues related to nuclear safety?

Answer

The act on atomic energy contains the following obligations:
The licensee of a nuclear facility or a radioactive waste repository shall be obliged to inform the public on every extraordinary event. [Section 4 subsection (4)]
The public shall be informed on the monitoring results of the radiation conditions in the environment at least on a monthly basis. [Section 10 subsection (2)]
The licensee of a radioactive waste repository or spent fuel interim storage or final disposal facility (hereinafter referred to as: storage or disposal facility), in addition to the legal obligation on public information and to the methods determined therein may also regularly inform
a) the population of the settlement or settlements hosting the storage or disposal facility and of the adjacent settlements; and
b) the population of the settlements concerned by the permitted research drills in the frame of the site selection activity serving for the establishment of a storage or disposal facility
about the content specified according to Subsection (4) of Section 4 and Subsection (2) of Section 10, and Section 40 of this Act through the monitoring and information association of local governments (hereinafter referred to as: association).[Section 10/A subsection (1)]
The act on atomic energy also requires the atomic energy oversight authority (HAEA) to hold public hearings during the following licensing procedures of nuclear facilities: siting, construction, expansion, commissioning, operation, operation beyond design service life, modification, final shutdown, decommissioning.

4.	Country Austria	Article General	Ref. in National Report General

Question/ Comment To which extent does the Regulatory Body currently publish safety relevant licenses, decisions, assessments, etc.? Are there intentions to modify current practice?
Is the general public currently involved in the decision making of the Regulatory Body relevant to nuclear safety? Are there intentions to modify current practice?

Answer

One of the main principles in HAEA communication is to ensure transparency. HAEA gives account about all of its decisions and publishes them on its website in a table form, with the most important details, with easily understandable composition. Moreover HAEA publishes news on its website about the processes that could be in the focus of public interest (for example when an important application arrives to the authority, about the start of an official procedure according to Hungarian regulations.

To involve general public in the decision making is an important element of the Atomic Act (Act CXVI of 1996 on Atomic Energy) in Hungary. Based on the proposal of HAEA, the Parlieament ameneded the Atomic Act in 2013, now it contains all particular cases when the Authority must involve the general public (for example organizing public hearing). These cases are the most important licensing procedures of in the life of the plant (siting, construction, expansion, put in operation, operation, service life extension, facility level modification, decommissioning).

5.	**Country** **Canada**	**Article** **General**	**Ref. in National Report** **Page 84, Annex 6**

Question/ Comment

Could you elaborate on the modifications completed as part of the life extension plan for the Paks NPP?

Answer

The lifetime assessments and non-destructive examinations of the main equipments confirmed that the equipments can be operated for the extended operation term (50 years), their replacement is not necessary.
The most important modifications completed as part of the service life extension plan for the Paks NPP unit 1 were as follows:

a) Finishing those earlier decided and licensed modifications which are necessary for severe accident management:

- Reactor cavity flooding and external cooling of the reactor pressure vessel: the aim of this modification is to retain the reactor pressure vessel's integrity in a severe accident situation.
- Establishment of the autonomous accident electric supply possibility: the aim of this modification is to provide electric supply in case of a complete station blackout, when no safety power supply is available.
- Installation of accident hydrogen recombiners: the aim of this modification is to prevent the build up of the combustion concentration of hydrogen and to avoid the damage of containment in an accident situation.
- Installation of severe accident monitoring system: the system provides information for the using of severe accident guidelines and to support decision-making during a severe accident situation.
- Introduction of the severe accident management guidelines.

b) Additional modifications required to enhance safety, e.g.:
Increase the earthquake resistance of the structures for

- connections between the reactor building and auxiliary building,
- connections between the reactor building and the vent stack.

Reinforcement of the turbine building's steel structure against extreme wind loads.

6.	Country France	Article General	Ref. in National Report All

Question/ Comment	The choice of using italic words to highlight changes since the previous version of national report (5th CNS) is very helpful.
Answer	Thank you☺

7.	Country Indonesia	Article General	Ref. in National Report 3.2, p. 9 para 2

Question/ Comment	The Nuclear Safety Code enacted in the summer of 2011 as annexes of Govt. decree 118/2011. (VII.11.) Korm. significantly simplified the regulatory licensing procedure; the modifications are licensed with the issuance of only one license. What is the reason in changing of the Act ?
Answer	The change was introduced into the act on atomic energy itself, into the implementing governmental decree, as well as into the Nuclear Safety Codes constituting annexes to the decree. The main reason was the desire to rationalise efforts of the regulatory body in its supervisory activities, and that way to enhance effectiveness and efficiency in line of the IAEA requirements on due grading of procedures depending on the safety relevance of the given case. Hungarian legal system requires that all licensing procedures shall be finished within the timeframe defined by law. As the regulator possesses only limited human resources, and the NPP kept an almost steady high flux of modification submissions requiring licensing –not always of very high safety significance – it could overwhelm the regulatory activities. In principle – submitting big number of requests – the licensee could divert the inspection personel from these activities to licensing. The aim was significantly decreasing the number of licensing procedures, abandoning them e.g. for manufacturing of those components requiring modifications and substitute licensing by inspection activities. In hands of the regulatory body the inspection as an instrument provide chance to focus on the issues most important from safety point of view.

8.	Country Indonesia	Article General	Ref. in National Report National Action Plan p.8, a

Question/ Comment	The authority evaluated the action plan submit by the licensee (11). A working group was established to carry out the evaluation, which prepared a work plan including the major milestone and viewpoints of the review. The review was carried out by at least two experts in each professional area and task, based on whether: - the task have any relationship to Service Life Extension or Periodic Safety Review result (in order to establish agreement among action plans).

How is the Periodic Safety Review requirement related to the regulatory requirement of life extension ? Is there any regulatory guide for life extension and operational license renewal ?

Answer

Q1: Each technical issue and modification are managed under the current licensing basis. Some isuses were made as pre-conditions for service life extension. Shortly these have been the

- introduction of an effective ageing management program,
- extension of time limited ageing analyses for the life extension period,
- complete the missing design information mainly in terms of strength analyses,
- amend the in-service inspection programme,
- implement the maintenance rule,
- complete the missing environmental qualification for I&C and electric equipment,
- introduce the SAMGs and complete the related modifications,
- carry out a complex condition review of the most important safety related SSCs.

The 10 years' Periodic Safety Review keeps track of trends, changes in state-of-the-art technology, operating experience, plant conditions and provides the authority with an instrument to limit the operating license if the licensing conditions are not met or jeopardized.

Q2: The HAEA issued several regulatory guides to support the above mentioned activities: guides for ageing managemt, equipment qualification, strength design review, maintenance rule. In addition a regulatory guide was provided for the Service Life Extension process.

9.	**Country** **Indonesia**	**Article** **General**	**Ref. in National Report** **National Action Plan, p.34, summary**

Question/ Comment

The National Action Plan mentions that following the completion of the international review, based its outcomes, Hungary will re-assess the need modification and, if appropriate, take the necessary steps.
Could you provide more information on the scope of re-assessment and the need for modification?

Answer

The Hungarian Atomic Energy Authority is continously monitoring the execution of the plan. The most important measures already completed and planned are, as follows:

- Seismic monitoring system: In the frame of the seismic instrumentation reconstruction project which is in the preparatory phase, the question of automatic shutdown had been revised (task No 9.).
- Enhancement opportunities of on-site and off-site AC power supply: Out of the two power plants being able to supply external electric power via dedicated lines, the black-start capability (start-up from own diesel generator) shall be created for the Litér gas turbine (task No 25.). Procedures have been developed for the use of the possible, but not stationarily applied cross-links between the units for normal operation and for the cross connecting the safety buses (task No 26.).
- Further independent tasks: Periodic inspection, maintenance and operational testing of the equipment to be applied in case of extremely low water level of the Danube had been supplemented. The respective – formerly missing – inspection, testing and maintenance instructions have been developed (task No 12.).
- Further studies to address uncertainties: Probabilistic assessment for operational states of closed reactor under 150º C primary circuit temperature concerning a possible time limit considering the balanced distribution of risk had been reasonably estabilished and introduced (task No 28.).
- Presence of hydrogen in unexpected locations: Distributions using less conservative, three dimensional analyses beyond the use of the lumped parameter models shall be performed (task No 41.).
- Recurrence frequency taken into account in the design basis: Considering natural hazards of 10 thousand year recurring frequency. For earthquake, flooding and low water level of Danube (task No 1.).
- Protected volume approach: The water penetration through the walls would accumulate in a sump and a permanently installed sump pump can remove it. Modification of the wall penetrations to a sealed design shall be carried out (task No 6.).
- National review of emergency response activity, and developments: One of the main objectives of the national exercise planned to be organized in the first half of 2013 is to practice media communication, as well as to practice the execution of certain protective actions with the participation of the invited representatives of the public (task No 51.).

The authority ordered to perform the necessary actions via resolution HA5589. The Paks NPP informs the HAEA of the current status and developements of the corrective actions in the half-year reports. Based on the latest report submitted to the HAEA the final deadlines of the implementation were consistent with the expectations. Deadline: 15. december 2018 for 4 units, since extended outages needed for modifications. The HAEA also performs targeted and occasional inspections in relation to the particular modifications.

10.	Country Norway	Article General	Ref. in National Report Annex 2

Question/ Comment Could Hungary elaborate on the time aspect of the systematic ageing management program?

Answer The developed component specific aging management programmes (AM) take into account the experiences gained from the operation of the last 30 years. It means that all the known failures and degradation mechanisms and also the consequences of those are considered, when the content of the AP programmes were developed. Also, the period (frequency) of the addressed in-service inspection activities for monitoring of the condition of the components are established by Time Limited Ageing Assessments and these periods are significant features of the AP programmes.

11.	Country Pakistan	Article General	Ref. in National Report General

Question/ Comment Hungary may like to share information about the current status of implementation of actions taken/planned in response to Fukushima accident?

Answer The post-Fukushima National Action Plan of Hungary has been issued on December 12, 2012. It discusses the safety improvement actions resulted from the stress-test of Paks NPP and other action decided by the Hungarian authorities. The Hungarian National Action Plan is available in English on the ENSREG's home page (see the links bellow). The last part of the Action Plan presents and summarizes the actions in a table format together with the deadlines for their implementation. The progress of the implementation of the licensees' action plan is supervised by the authority in the frame of comprehensive and targeted inspections. In order to facilitate the tracking process of the implementation of the action plan, the authority obliged the licensee to prepare periodic progress reports. The latest progress reports proved that the progress in the implementation of the actions is still in agreement of the schedule documented in the National Action Plan.
http://www.ensreg.org/EU-Stress-Tests/Country-Specific-Reports/EU-Member-States/Hungary
http://www.oah.hu/web/v2/portal.nsf/att_files/Sajto2012/$File/NAcPv4_Eng_final_small.pdf?OpenElement

12.	Country Slovakia	Article General	Ref. in National Report p. 8

Question/ Comment The new operating licence of Unit 1 was granted in December 2012. To which extent the licence has been influenced by the the "Stress test"?
Could Hungary present more detailed information on the conditions (if any) imposed by HAEA for further operation (ageing

programs, reporting, etc.)?

Answer

Q1: Basically the stress test results have not influenced the service life extension license. The results and the concluding safety improvement measures – like all other safety related problems, general ageing issues or operating experience – were and are managed under the current operating license of the plant.

Q2: The regulations contained pre-conidition for the service life extension of Paks NPP. Shortly these have been the

- introduction of an effective ageing management program,
- extension of time limited ageing analyses for the life extension period,
- complete the missing design information mainly in terms of strength analyses,
- amend the in-service inspection programme,
- implement the maintenance rule,
- complete the missing environmental qualification for I&C and electric equipment,
- introduce the SAMGs and complete the related modifications,

carry out a complex condition review of the most important safety related SSCs.

13.	**Country** **Slovenia**	**Article** **General**	**Ref. in National Report** **20/67**

Question/ Comment

Could you give us the information, what would be the scope of the severe accidents which will be covered by the severe accident simulator.
Please describe the most relevant accident scenarios which you plan to cover.

Answer

During verification process all guidelines are planned to use in all possible plant damage state (nominal power and shutdown state, closed and open containment, closed and open reactor, spent fuel pool, etc.). For that different sequences from dominant PDS should be chosen, in which plant behaviour will be different and systems go to different end state. Sequences are classified on the deterministic basis and depending on accident type.

1. Depending on the primary and secondary parameters:

- Fast accident scenarios lead to low primary pressure core damage:
  - LBLOCA with ECCS failure
  - MBLOCA with HA and ECCS failure and late scram
- Slow accident scenarios with important secondary heat sink:
  - SBLOCA with ECCS failure, without secondary cooling
  - Station blackout or loss of heat sink (with closed and open reactor)

2. Depending on containment behaviour:
   - Containment spray operation (overpressure, hydrogen conc.)
   - Open or closed containment (releases and loss of cooling water)
   - PRISE or interface LOCA
   - Water reserve in sump (ECCS water, water from the trays).

12 severe accident scenarios were determined fulfilling requirements above. All these scenarios were based on severe accident analyses made by MAAP4/VVER code for Level 2 PSA. After selection, all scenarios were calculated in details and output from them were used during verification of SAMG.
Dominant sequence is described below:

- Station blackout with SBLOCA, nominal power, closed containment (13 mm LOCA from MCP seal, no ECCS, no secondary heat sink). Secondary cooling recovery after 10 hours, ECCS recovery after 26 hours.
  Guidelines in use:
  EOP: ECA-0.0 – primary depressurization at 550 °C, transition to SAMG at 800 °C
  SAMG: SACRG-1,2 – drainage water from the bubble condenser trays (takes about 80 min)
  DFC: SAG-1,2,3,4,5,6,7 (reactor cavity flooding at the relevant sump water level)
  SCST: SCG-1,2,4
  SAEG 1,2

Also the scope of the SA simulator will consist of these scenarios according to the plans.

14.	**Country** **Slovenia**	**Article** **General**	**Ref. in National Report** **ANNEX 6 /83**

Question/ Comment What has been the biggest and most important challenges during the PAKS life extension (ageing of material, technology, I&C, design, etc)?

What was the most important Authority additions (supplements) to programme?

Answer

Q1: During development of the Service Life Extension (SLE) application of Paks NPP there were a couple of challenges which were listed below:

- **Changes in the regulation**

During the development phase of the SLE programme a clear regulation was available in Hungary. In 2011 the regulation was updated, which modified some aspects of the SLE, e.g. the scoping process or the content of the documentation. This meant an uncertainty in the licensing process.

- **Timing issues**

Due to the fact that all time limited ageing analyses (TLAAs) had to be re-evaluated, the process required rather long time. Consequently the time for managing the consequences of the TLAA review turned out to be very short, especially for those cases, when not only administrative measures were needed, but also some new programmes had to be developed and implemented.
The final scope of the AM was fixed in 2011. This means that the development of the AMPs could be completed also in the same year, when the SLE application was submitted to the authority. Consequently no time remained to collect experiences on the execution of some AMPs. Therefore the justification of the efficiency of these programmes was rather difficult.

- **Missing design documentation**

The validation of the TLAAs for the extended operational lifetime was rather complex and difficult for Paks NPP, as with any other VVER-440/V-213 plants. The issue relates to the availability of design base information and the incompleteness of the delivered design documentation. Although Paks NPP performed a design base review, some of the original design assumptions, inputs and design conditions remain unknown. Often only the final results of the analyses were known, or the analyses can be presumed to be obsolete.

- **Aging Management Programmes (AMOs)**

There are around 150 AMPs applied at the Paks NPP. The most of the AMPs were developed during the last couple of years and this action needed huge effort from the operation and technical support plant staff to serve with all necessary information.

- **Scoping & screening for AMP review**

Around 25000/unit components belong to the scope of SLE (plus the cables the number of which are greater than 140000). The justification of the completeness of the SLE scope was based on technological diagrams as well as walk down inspections. The

management of this huge number of components needed much time and many staff efforts.

- **Environmental Qualification (EQ) of the I&C and electrical components**

There were huge number of components within the scope of the EQ programme which resulted in positive results when the qualifications could be completed. Also, in a few cases the qualification term resulted in less time compared to the targeted extension period, therefore other measures had to be decided (e.g. replacements or extension of the validity of the EQ).

Q2: Authority contribution: development of regulations, clear definition of pre-conditions for licensing SLE, development of regulatory guides in the following topics: ageing management, SLE application, maintenance rule, equipment qualification, strength analyses, PTS analyses. These made the SLE application much more accurate and the expectations were described in details.

15.	**Country** **Austria**	**Article** **Article 6**	**Ref. in National Report** **6.1.3, p13-14**

Question/ Comment

The 6th National Report for the CNS provides some discussion of the probabilistic safety assessment results following safety improvements. Given the fact that seismically-initiated accidents dominate core damage frequency (CDF), could Hungary please identify which seismically-initiated accidents sequences contribute significantly (i.e. contribute 10% or more) to the reported seismic core damage frequency of 6.4×10E-5/a? Did the seismic PSA consider accidents occurring during shutdown and/or refueling?

Answer

The results of the seismic PSA are dominated by the untested, non-qualified relays and cabinets failures (risk contributing factor: 0.46).
The correlated failure of this relays and cabinets (among other things) can lead to the total power outage, diesel generator failure, all steam generators (SG) fast- acting valve simultaneous closing, all SG safety valve simultaneously open or all feedwater and active ECCS operating system incapacitation. The total loss of the feedwater and the primary feed and bleed inability of very rapid cooling contribute to the occurrence of core damage.

The overall seismic core damage frequency is caused in about 25 % by the earthquakes in SEIS1 -SEIS3 acceleration ranges (less than 0.25 g). 75% of the seismic core damage frequency comes from the SEIS4 - SEIS7 acceleration ranges (0.25 g or greater acceleration).
The seismic events are taken into account in all Plant Operating States (POS), in normal operation and the shutdown / refueling conditions as well.

16.	Country Austria	Article Article 6	Ref. in National Report 6.1.3, p13-14
Question/ Comment	The 6th National Report for the CNS provides some discussion of the probabilistic safety assessment results following safety improvements. Severe accidents initiate by fires and floods are shown to contribute a core damage frequency of 1.0×10E-5/a, the second largest contributor after seismic? Did the fire and flood PSA consider external flooding? Did the fire and flooding PSA consider accidents initiated by these events that could occur during shutdown and/or refueling?		
Answer	The external flooding phenomenon is a part of the external PSA, study is in progress. All the Plant Operating States (POS) were taken into account in the fire and flood PSA study, the shutdown POS-es as well.		

17.	Country Austria	Article Article 6	Ref. in National Report 6.1.3, p13-14
Question/ Comment	The 6th National Report for the CNS provides some discussion of the probabilistic safety assessment (PSA) for the Paks units. Could Hungary please indicate whether the PSAs are based on the PSA requirements contained in IAEA Safety Series No. SSR-2/1 and SSR-2/2, as well as the IAEA Safety Guides on Level 1 and Level 2 PSA (IAEA SSG-3 and SSG-4)? If not, what other guidance documents or alternative equivalent methods were followed in the PSA analyses?		
Answer	The requirements regarding the contents of the PSA is based on the following documents: • Procedures for Conducting PSA of NPPs (Level 1) IAEA Safety Series No. 50-P-4 • Analysis of Core Damage Frequency: Internal Events Methodology NUREG/CR-4550 • A Compendium of Practices on Safety Improvements in Low-Power and Shutdown Operating Modes NEA/CSNI/R(97)16, Principal Working Group No. 5 OECD-NEA • Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No. SSG-3 • Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No. SSG-4 • American National Standard for Level 1 / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, ANSI/ASME/ANS RA-S-2008 (revision of ANSI/ASME/ANS RA-S-2002) • American National Standard for External Event PRA Methodology ANSI/ANS-58.21-2007 (revision of ANS-58.21-2003)		

18.	Country Austria	Article Article 6	Ref. in National Report 6.1.3, p13-14
Question/ Comment	The 6th National Report for the CNS provides some discussion of the probabilistic safety assessment results. Have the Paks PSAs considered the possibility of concurrent accidents taking place in more than one unit at a time? If so, what is the core damage frequency contribution from multiple unit accidents? If not, please explain why not.		
Answer	Multiple unit events are not considered as Initiating Events till now in the PSA study. No such requirements are in the legal regulation at Government Decree level. The evidence of the necessity of this type of study is clear, it is a part of the short-term plan of the NPP.		
19.	**Country** **Austria**	**Article** **Article 6**	**Ref. in National Report** **6.1.3, p13-14**
Question/ Comment	The 6th National Report for the CNS provides some discussion of the probabilistic safety assessment results. Have the Paks PSAs considered severe spent fuel pool accidents, including those occurring during full core offload conditions? If so, please indicate the analysis scope (internal events, external events, etc.) and the results of the analyses. If not, please indicate whether such analyses are planned for the future and when they are expected to be completed.		
Answer	The following internal initiating events of the spent fuel pool were taken into consideration in the Spent Fuel Pool Level 1 PSA study: outage of cooling, loss of coolant on a separable section of the cooling circuit, loss of coolant on a non-separable section of the cooling circuit, internal fire, and internal flood. There are 4 spent fuel pool operating states in this PSA study, and one of them is the full core offload. The annual fuel damage probability from internal initiating events of the spent fuel pool for the selected reference unit is 2.1×E-07. This result includes the result from the full core offload operating state taken into consideration the operating state length weighting factors. There is a two year long project for creating the seismic PSA of the spent fuel pool; it is expected to be completed at the end of the year 2014. For other external hazards than the seismic event, the creating of the spent fuel pool PSA is in progress, further investigation is necessary in this area.		
20.	**Country** **Austria**	**Article** **Article 6**	**Ref. in National Report** **6.3, p15**
Question/	The 6th National Report for the CNS provides some discussion redesign of the Budapest Research Reactor to take low enriched		

Comment	uranium fuel, and the shipment of former high enriched uranium fuel to the Russian Federation. Austria commends Hungary for this voluntary reporting within the frame of the Convention on Nuclear Safety and identifies this as a good practice for future CNS reports by all Contracting Parties.
Answer	Thank you☺

21.	**Country** **Austria**	**Article** **Article 6**	**Ref. in National Report** **6, p31-34**

Question/ Comment	Could you please share with us how Hungary is going to address future needs of qualified personnel, both for the regulator and the utilities?
Answer	Related to the operating personnel for operating units, regarding the availability of qualified personnel is systematically organized for the Paks Nuclear Power plant. We understand that the question is related to addressing the needs of qualified personnel taking into account the lessons learned from the Fukushima event. In this aspect the Paks NPP has set up the so called 'Technical Support Centre' (TSC) whose responsibility lies in providing support to the functions of the operations staff in case of a severe accident. Also members of this Centre are the Unit Shift Supervisors. Additionally, a simulator instructor with unit shift supervisor licence is delegated to act as a member of the Emergency Response Organization which actually comprises the Technical Support Centre. The members of the TSC have been enrolled in a special theoretical initial training program which is planned to be supplemented with a practice-oriented, simulation tool supported module from 2015. Related to the new units, according to the Sixth National Report Chapter 11.2 „The Hungarian system of higher education offers a wide range of professional knowledge through the education of … engineers …". Hungary plans to enhance this knowlegde for the nuclear related professionals. Therefore some agreements are being prepared with different universities to complete the education plans of mechanical engineers, electrical engineers, instrumentation and control engineers, chemical engineers and civil engineers with nuclear related knowledge. Also Hungary plans to enhance the postgraduate courses of these universities. From 2014 HAEA is planning its training activity on a four years basis. It means HAEA as a governmental Authority have to prepare an individual training program for each employee for four year period. Each element of the program has an own credit value. At the end of each year and the four year period all employee have to collect a well defined number of credits. The training program is containing civil service and professional training elements also. In addition as a consequence that Hungary is planning to build new units, HAEA is planning to engage 70 new employees whose special training program is now under elaboration. The new employees are mostly graduated in the Technical Universities which are providing a good engineering basis, but they also need special,

professional nuclear training which will be provided by the above mentioned training program of HAEA. In this training program other, special organizations will be involved who are able to provide the expected knowledge for the trainees. The estimated period of the training program is 2-3 years which will be finished with an examination. Nevertheless, HAEA is trying to its best to provide competitive salary for all employees to be able to keep the personnel from the very attractive jobs of other companies and institutes.

22.	**Country** **Czech Republic**	**Article** **Article 6**	**Ref. in National Report** **6.2/ page 14**

Question/ Comment One of the new used fuels in Dukovany NPP required some changes in its safety analysis approach during its storage in the CASTOR cask. Do your storage tubes or vaults in your storage facility, or your safety analysis need some special enhancements in the case of using fuel elements with enrichments of 4.2% or above and/or burning absorbers?

Answer In Hungary in the case of a new fuel safety analyses for the transport and storage facilities are always revised. Depending on the results of SAs modifications or technical measures are implemented. Up to now no modifications of the transport and storage facilities have been necessary. However technical measures were introduced for the storage in the at-reactor-pool in the case of the profiled (3.82%) and Gd-2n (4.2%, Gd in 3 pins) type fuels. Namely, instead of the introduction of burnup-credit absorber assemblies have to be placed into certain positions of the pool.

23.	**Country** **Finland**	**Article** **Article 6**	**Ref. in National Report** **annex 6, page 83, last paragraph**

Question/ Comment The operation license is granted from January 1, 2013 to December 31, 2032. How do you ensure the plant safety during the licensing period, as e.g. by Periodical Safety Review (PSR) after about 10 years of operation, or are some other measures applied for this purpose?

Answer Plant safety is ensured during the extended service lifetime by the existing regulatory instruments according to the current licensing basis of the plant. This also involves the 10 years' Periodic Safety Review cycle and by the monitoring of the implementation of specific inspection programme prescribed in the operational license. Service life extension was implemented separately from the PSR cycles. The next one in Paks NPP will take place in 2008 for the whole plant irrespective of the time of granting service life extension for the particular units.

24.	**Country** **France**	**Article** **Article 6**	**Ref. in National Report** **6.1.3, p13 - (14.3, p40)**

Question/ The list of safety improvement measures includes "external cooling of the reactor pressure vessel by flooding of the reactor cavity".

Comment	What is the level of confidence resulting from analysis re efficient in-vessel retention? In other words, has the risk of steam explosion been quantified?
Answer	Efficiency of in-vessel retention was calculated for all branches in containment event tree (one of the branch is question about steam explosion) for all dominant PDS sequences. In case of technological origin, internal fire and flooding events at nominal power higher than 90 % average success probability was calculated. This value is depending not only on steam explosion but also on SAMG user effect, time of drainage and amount of water in the sump, primary pressure reduction, etc. The effectiveness of the external cooling of the RPV by cavity flooding has been proven with several experiments performed on the CERES test facility. The CERES facility was developed by the Institute for Energey Research (former KFKI AEKI) for experimental modelling of the in-vessel melt retention via external Reactor Pressure Vessel (RPV) cooling in a specific VVER-440 cooling loop geometry. Up to now 6 series of tests were performed with different boundary conditions (narrow gap width, RPV heat flux, outlet cross section, boron acid, etc.). The results of the experiments showed, that the coolability of the RPV can be ensured, the boiling crisis can be avoid.

25.	**Country** **India**	**Article** **Article 6**	**Ref. in National Report** **Page 12 subsection 6.1.1**
Question/ Comment	It is mentioned in the report that power enhancement program was carried out during 2006-2009 in MVM PAKS NPP (from 440MWe to 500MWe). Can Hungary provide details on the safety and operational performance of the NPPs post uprating of these units		
Answer	As a matter of fact the safety and operational performance of the units did not change as a result of the power enhancement of the reactor units. Of course the amount of produced electrical energy increased in proportion of the increased power. There were no changes made that could result in either reduction or improvement of the performance. The safety margins remained adequate to provide the same safety level of the reactors by using more sophisticated methods of reactor core monitoring and some implemented changes to the design of the nuclear fuel.		

26.	**Country** **Slovenia**	**Article** **Article 6**	**Ref. in National Report** **13-14**
Question/ Comment	It is impressive how the CDF due to internal initiating events decreased for two orders of magnitude during less than 20 years. Do you have an estimation how much of it is the result of plant modifications and procedures change and how much is the result of		

	model and data improvement/refinement?
Answer	The most part of the CDF reduction (more than 95%) come from the plant modifications and the new procedures was implemented since 1990. The most powerful modifications were the follows: • Relocation of the AEFW pumps from the turbine hall to a protected place. • Implementation of the EOP and the (shutdown) SEOP (Westinghouse origin). • Reinfrocement of the SSCs against earthquake stress. • Modification of the Sequential Loading System (SLS). Etc. The effect of the data upgrade to the CDF was low, less than 1%.

27.	**Country** **Spain**	**Article** **Article 6**	**Ref. in National Report** **13**
Question/ Comment	In addition to the SAMGs, are there currently available in Paks NPP guidelines and equipment to cope with big destructions and fires, as those that could be caused by the impact of a commercial aircraft?		
Answer	The SAMG is symptom based, we do not use event based procedures and guidelines. Nevertheless we started the investigation of the impact of a crahsed aircraft according to the stress test. If the results of this analysis account for any change in the SAMG or other document in the Emergency Plan, we modify the relevant document.		
28.	**Country** **Ukraine**	**Article** **Article 6**	**Ref. in National Report** **para 6.3 page 15**
Question/ Comment	It is stated in the national report that the Budapest Research Reactor was built in 1959 and completely reconstructed between 1986 and 1993. Please clarify the following aspects: - Is the design lifetime established in the design for the research reactor? - “Full reconstruction” – does this mean that all coolant system components were upgraded or replaced? If so, what was the scope of reconstruction for the tank? - What is the time limit for periodic safety review for lifetime extension established by the regulator?		
Answer	Q1: The Budapest Research Reactor is operated by *the HAS Energy Research Centre (formerly known as the KFKI Atomic Energy*		

Research Institute) was built in 1959. The reconstruction of the facility was carried out between 1986 and 1993. As a result of the assesment, after the reconstruction the new design lifetime became 30 years, but still remains in the 10-yearly periodic safety review.
Q2: During the reconstruction all primary circuit pumps and valves had been replaced. The reactor vessel was replaced during the reconstruction and a new high-purity aluminum reactor "tank" had been installed. The secondary cooling performance had been increased. The „full reconstruction" meant here that the components of the cooling systems were reconstructed and replaced.
Q3: The periodic safety review of the Budapest Research Reactor was launched in the reporting period; the Periodic Safety Review Report was submitted to the Authority at the beginning of 2013. According to national regulations six months is available for the regulatory evaluation and decision making. At the end of the yeat, after approval of the PSR and teh respective improvement measures, the regaulatory body issued a new 10 years operational license.

29.	**Country** **Ukraine**	**Article** **Article 6**	**Ref. in National Report** **para 6.1.3 page 13**

Question/ Comment	It is indicated that the average probability of core damage calculated for a year is 7.1x10(-6) for internal fires and floods. Does this value take into account fires and floods in operating states under shutdown for refueling or overhaul?
Answer	Yes, it does. The average core damage probability from internal fires and floods is 5.7×E-06 for full power operation mode (~11 months) and 1.4×E-06 for shutdown plant operating states (~1 month), so the annual core damage probability is the sum of these values: 7.1×E-06.

30.	**Country** **Ukraine**	**Article** **Article 6**	**Ref. in National Report** **para 6.1.3 page 13**

Question/ Comment	Para. 6.1.3 provides information on safety improvement measures and CDF values for each year of Paks NPP operation. It can be assumed that living PSA has been introduced at the NPP. Are probabilistic models going to be further used for risk monitoring and risk-informed decision-making? If so, what RIDM areas are considered to be of priority?
Answer	Our Level 1 Living PSA model was the basis of the Risk Monitor model developed for all Paks units. The Risk Monitor is ready for use. The software is the Risk Watcher (Lloyd's Register Co). We are going to implement in-operation maintenance as a test application for RIDM and RM. This application is in the phase of authorization.

31.	**Country** **Ukraine**	**Article** **Article 6**	**Ref. in National Report** **para 6.1.3 page 14**

Question/ Comment	It is stated that MVM Paks NPP Ltd has performed seismic assessment of the selected reference unit and determined the value of anticipated core damage frequency. How the average value of core damage frequency of any unit of the nuclear power was determined? Were probabilistic earthquake frequency distributions and associated probabilistic distributions of peak ground accelerations obtained for each earthquake level? What measures are underway (or planned) to determine the actual contribution of seismic impacts to the core damage frequency for Hungarian NPP?
Answer	The seismic PSA basic steps are as follows: 1. Determining the Seismic Level Groups (7 groups). 2. Determining the seismic load curves as hazard functions. 3. Selection of the damaged safety-relevant systems, structures and components (SSC) by earthquake as the definition of systems and components vulnerability curves. 4. Evaluation of the fault tree - event tree model of the consequences of the earthquake initiators 5. Numerical evaluation of event sequences. The CDF due to earthquake for the reference unit is 4.31×E-05/year in normal operation and the earthquake CDP during shutdown is 4.7×E-06. The overall CDP due to earthquake in an annual year is 4.41×E-05.

32.	**Country** **Spain**	**Article** **Article 7.1**	**Ref. in National Report** **19**

Question/ Comment	In addition to general license to operate a NPP, the plant modifications shall receive a separate license. According to the report (pg. 9), the Nuclear Safety Code was modified in August 10, 2011 to simplified the regulatory procedure of licensing plant modification. In order not to decrease nuclear safety of the facility by modifications getting lower licensing attention by the Authority, the Code increases the licensing tasks of the Authority, further prescribing that the Licensee shall assess, with the involvement of experts being independent from those participating in the modification, the design documentation, the fabrication, purchase, assembly and commissioning activities. Does HAEA published additional regulations or guides with the criteria to identify the modifications that need a specific license under the new procedure and the analysis to be performed by the licensee in order to make sure that: • The modification to be implemented doesn’t need a specific license? • The safety and licensing conditions of the plant continue to be maintained after implementing the modification?

Could you provide more information on the scope, content and frequency of the inspections carried out by HAEA on plant modifications? Are all the modifications implemented after the change of the Nuclear Safety Code been reviewed by HAEA or only a sample of them? In the case that the review has been limited to a sample, which criteria have been applied to select the sample?

Answer

In the last year (2013) the regulatory body published a guide for the treatment of processes which related to modifications. The guide consists of processes of licensees and function, tasks, responsibilities and empowers of these processes as well requirements of regulatory licences. The guide requires that safety impacts of planned modifications should be assessed and according to this the category of modification should be determined.
The regulatory supervision of modifications is graded according to safety importance, but it extends over all technical, documentation and organisational modification, as well as temporary modificatioons.
In order to ensure the graded approach the modifications shall be categorized according to safety significance. It shall be regulated in the management system of the licensee as follows:

a) those modificaitons shall belong to category 1 for which at least one of the following attributes is true:
  aa) the modification has a significant effect on the radiation risk of the population and the persons at the site,
  ab) the modification changes design or licensing basis principles or conclusions,
  ac) the modification changes the scope of design basis accidents,
  ad) it modifies such technical solutions that are necessary for the fulfilment of safety objectives,
  ae) the modification may lead to the change of TechSpec.
b) those modification shall belong to the 2. category which may not be categorised into either the 1. or 3. category.
c) those modification shall belong to the 3. category for which at least one of the following attributes is true:
  ca) the modification shall not have a safety consequence,
  cb) the scope of modification does not affect safety SSCs nor special authority regulation has specific requirement on them,
  cc) design or the execution failure of the modification shall not significantly increase the frequency of fuel damage, nor the radiation risk of the population and personnel.

The nuclear safety authority prepares, maintain up-to-date, and execute the supervision plan for the modification on the basis of the information submitted by the licensee. The HAEA performs the necessary inspections, but not for all modifications.
HAEA has a separate database to follow the modification process.
After the modification, but befor putting into operation or validating the modification the licensee shall submit the Documentation Substantiating the Operation Following Modification, which shall be checked and formally approved by the HAEA.

33.	**Country**	**Article**	**Ref. in National Report**

	Spain	**Article 7.1**	**20**
Question/ Comment	In relation to the inspection activities, could you specify the average number of inspections per year, as well as the estimate resources (hours per person)? How many people do the HAEA Site Office at Paks and which are their main tasks? Could you provide the number of special inspections of events that HAEA have perform in Paks NPP during the last three years and the human resources (person x hours) devoted to this activity?		
Answer	Q1: In the last year (2013) HAEA Inspectors made 267 inspections and 31 consultancy meetings. It is hard to estimate the resources (preparation time, preparation of inspection report (record), the additional time use). The average participation in an inspection is 1-2 inspectors. For the execution of an inspection our inspectors needs an average of 1-2 hours. The average participation in a meeting is 2-3 inspectors. For the execution of a meeting our inspectors needs an average of 2 hours. Q2: The HAEA Site Office at Paks has 9 Inspectors. 6 of them are performing inspection and licensing activities. 2 inspectors are working for technical support and 1 for project management. Q3: For the special inspections of events that HAEA have performed in Paks NPP during the last three years HAEA devoted approximately 240 person x hours.		
34.	**Country** **Spain**	**Article** **Article 7.1**	**Ref. in National Report** **20**
Question/ Comment	According to the Act on Atomic Energy, the Authority may impose sanctions against nuclear facilities and individuals employed in the area of the application of nuclear energy. Has any sanction be imposed against the licensee or any person during the last three years? If the answer is yes, please specify the violations.		
Answer	During the last 3 years financial penalty was not imposed on the licensee. However we can mention three cases, in which the nuclear safety authority (HAEA) ordered action mentioning the possibility of enforcement and fining: • Due to growing number of human errors, including several missing written maintenance records during the general overhaul and refueling period, HAEA ordered the evaluation of the work load on specific maintenance personnel groups. • Due to the growing number of diesel generator unavailability between 2010 - 2012, HAEA ordered for the analysis of operational, test and maintenance records and data, and obliged the licensee to elaborate counter measures against the decreasing diesel generator reliability.		

- The bolt connections of the head of the pressurizers required new nesting for the backing straps. The contour machining of the head went deeper than it was approved, and this fact challenged the stress resistance of the heading. HAEA ordered analysis and stress calculations for all of the pressurizer heads.

We have to remark, HAEA is not targeting the individuals with the enforcement measures, since the expectation is that the organization of the licensee and the safety and quality management should control and motivate the individuals towards good level of safety culture. The enforcement measures are addressed to the organization of the licensee, with that expectation that the individuals should be penalized by the management, if it is necessary.

35.	**Country** **France**	**Article** **Article 7.2.1**	**Ref. in National Report** **7.2.1, p17-18**

Question/ Comment The recent implementation of the Act on Atomic Energy looks prolific. Is it as usual as other years or is there a specific reason to explain it?

Answer So many changes are not usual in a 3 years period but they can be explained. Most of the reasons are external constraints.

There is a usual part of the changes according to the rules of the law. The act on atomic energy prescribes that nuclear safety requirements for the application of atomic energy shall be regularly revised and updated taking into account scientific results and international experiences. [Section 5 subsection (1)]

The Govt. decree 118/2011. (VII. 11.) Korm. on the nuclear safety requirements for nuclear facilities and on the corresponding regulatory procedures prescribes that the Regulations shall be reviewed, and updated as needed, once in every five years, with regard to scientific achievements and international experience. [Section 3 subsection (7)]

Otherwise there were both changes in the system of the public administration and in the act on atomic energy. This is the reason for the new Govt. decree 112/2011. (VII. 4.) Korm. on the tasks of the Hungarian Atomic Energy Authority in relation to the application of atomic energy, in line with European Union and international obligations. It assigns the co-authorities participating in regulatory procedures, the maximum value of financial penalties to be imposed, and the operational rules of the scientific council supporting the work of the Authority.

The act on atomic energy have new rules on independent technical expert proceeding in the scope of the use of atomic energy and for the implementation of these new rules was issued the Govt. decree 247/2011. (XI. 25.) Korm. on the independent technical expert proceeding in the scope of the application of atomic energy.

There were amendments stemming from the Targeted Safety Assessment.

There were amendments stemming from the harmonization of DIR 2011/70/EURATOM of 19 July 2011 establishing a Community

framework for the responsible and safe management of spent fuel and radioactive waste.

The rules of act on atomic energy have changed on the physical protection of nuclear material taking into consideration the results of the Amendment to the Convention on the Physical Protection of Nuclear Material. For the implementation of the new rules was issued the Govt. decree 190/2011. (IX. 19.) Korm. on the physical protection and on the corresponding licensing, reporting and inspection system.

Govt. decree 246/2011. (XI. 24.) Korm. on the safety zones of nuclear facilities and radioactive waste repositories makes possible to review the extent of the safety zones of nuclear facilities and radioactive waste repositories.

36.	**Country** **Pakistan**	**Article** **Article 7.2.2**	**Ref. in National Report** **Section 7.2.2, page 19**

Question/ Comment Hungary may like to explain how “co-authorities” interact with each other in the regulatory process.

Answer There are governmental decree level regulations about the co-authority relationship in the field of licensing between HAEA and other authorities. On the basis of bilateral agreement there may be occasional but common inspection activities of HAEA and the other authority organizations. Bilateral meetings and regulatory forums are organized periodically or in cases when common regulatory position should be achieved in complex questions. Generally saying, the relationship with the co-authorities is good.

37.	**Country** **Canada**	**Article** **Article 8.1**	**Ref. in National Report** **Page 23, Section 8.1.3.1**

Question/ Comment The report states “The technical support organizations carry out expert and scientific activities not only for the Authority (HAEA) but for nuclear installations as well”? In this situation how do you ensure independence of the Authority (HAEA) from the licensee?

Answer In all cases when HAEA is contracting with a TSO it is examined whether the TSO partner is working for the licensee in the given task. If necessary HAEA requests the TSO and the licensee to provide an official statement that in the particular case they are not in a contractual connection.

38.	**Country** **Canada**	**Article** **Article 8.1**	**Ref. in National Report** **Page 22, Section 8.1**

Question/ Comment What is the size of the Authority (HAEA) detachment deployed at the Paks NPP site?

Answer 9 HAEA inspectors are deployed at Paks NPP site.

39.	Country France	Article Article 8.1	Ref. in National Report 8.1 p21

Question/ Comment

"the minister for national development, acting on behalf of the Government, supervises the HAEA independently of her portfolio". It is not clear how the same powerful person is able to provide independence on two separate aspects. Could you please explain? Assuming that promotion of nuclear energy participates in the national development, could you please clarify in what extend the supervision of HAEA by the minister complies with the requirement 8.2 of the Convention?

Answer

It is possible to clarify the situation by citing legal rules of several acts. According to the act on atomic energy the use of atomic energy shall take place in a manner laid down by laws and under regulatory oversight. The competent authorities shall determine the conditions of the safe use of atomic energy in line with laws and with the consideration of the results of science and technology. These authorities shall be independent of the public administration organizations interested in promotion and development of atomic energy. [Section 5 subsection (2)]

The Government shall be responsible for the direction and oversight of the safe use of atomic energy. The Government takes care of execution of the tasks laid down in this act through the Hungarian Atomic Energy Authority, and the ministers determined in Subsection (1) of Section 20, Sections 22-26 and Section 28. (Section 6)

The Hungarian Atomic Energy Authority shall be a government office. A minister appointed by the Prime Minister shall perform the supervision over the Hungarian Atomic Energy Authority. The decisions of the Hungarian Atomic Energy Authority shall not be modified or annulled by virtue of supervision. (Section 8)

According to Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State a government office cannot be instructed in its' state administrative remit defined by law. [Section 70 subsection (4)]

The decision adopted by the head of the government office cannot be changed in the organizational frames of public administration. It means that no appeal may be lodged against such a decision, only judicial review is possible. [Section 100 and 109 of Act CXL of 2004 on the General Rules of Administrative Proceedings and Services]

The government office has the power of a budgetary body that forms a chapter in the budget. The government office forms a separate title within the chapter of the ministry headed by the supervising Minister.[Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State Section 70 subsection (4)]

The head of a government agency is appointed and dismissed by the Prime Minister on the proposal of the supervising Minister. [Section 71 subsection (4)] The proposal of the supervising Minister is presented to the Prime Minister by the Minister responsible for supervising the quality of public policy and staff policy (Minister of Public Administration and Justice) [Section 71 subsection

(5)] The minister responsible for the quality of public policy and staff policy, may object within fifteen days from the sending of the proposal and give back the proposal to the supervising Minister, or forward it to the Prime Minister. [Section 71 subsection (6)] The deputy head of the government office is appointed and dismissed by the supervising Minister on the proposal of the Head of the Government Office. [Section 71 subsection (7)] The head of the government office at the same time making his proposal to the supervising Minister on the person proposed to be the deputy head of the government office - informs the Minister responsible for supervising the quality of public policy and staff policy, who may object within fifteen days after the notification to the proposed person. The objected person may not be appointed deputy head of the government office. [Section 71 subsection (8)] In case of other employees the general director of HAEA exercises the employer's right.
Supervisory functions are according to Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State in the case of a government office are:

- constitution of legal rules under the authorization of law or government decree in responsibility of a government office or a makes a submission to constitute a law or a government decree,
- representation of the government office in front of the Government and the Parliament
- appointment and dismissal the head of a government office according to the rules stated in Section 71, and the exercise of any other employer's rights in connection with the head a government office,
- the approval of the organizational and operational rules of the government office

only in connection with the foundation, modification and termination of the government office and the appointment and dismissal the head of a government office , the withdrawal of the mandate , and - if the law or government regulation provides otherwise - the exercise of any other employer's rights in connection with the head of a government office, give an obligation to report, and management information of public interest and personal data defined by acts.

40.	**Country** **Spain**	**Article** **Article 8.1**	**Ref. in National Report** **21**

Question/ Comment	According to the report, the Minister for National Development supervises the HAEA. Which Minister is in charge of the energy policy and nuclear facilities? How are the separation of promotion of nuclear energy and safety control guarantied?
Answer	It is possible to clarify the situation by citing legal rules of several acts. According to the act on atomic energy the use of atomic energy shall take place in a manner laid down by laws and under regulatory oversight. The competent authorities shall determine the conditions of the safe use of atomic energy in line with laws and with the consideration of the results of science and technology. These authorities shall be independent of the public administration organizations interested in promotion and development of atomic energy. [Section 5 subsection (2)]

The Government shall be responsible for the direction and oversight of the safe use of atomic energy. The Government takes care of execution of the tasks laid down in this act through the Hungarian Atomic Energy Authority, and the ministers determined in Subsection (1) of Section 20, Sections 22-26 and Section 28. (Section 6)

The Hungarian Atomic Energy Authority shall be a government office. A minister appointed by the Prime Minister shall perform the supervision over the Hungarian Atomic Energy Authority. The decisions of the Hungarian Atomic Energy Authority shall not be modified or annulled by virtue of supervision. (Section 8)

According to Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State a government office cannot be instructed in its' state administrative remit defined by law. [Section 70 subsection (4)]

The decision adopted by the head of the government office cannot be changed in the organizational frames of public administration. It means that no appeal may be lodged against such a decision, only judicial review is possible. [Section 100 and 109 of Act CXL of 2004 on the General Rules of Administrative Proceedings and Services]

The government office has the power of a budgetary body that forms a chapter in the budget. The government office forms a separate title within the chapter of the ministry headed by the supervising Minister.[Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State Section 70 subsection (4)]

The head of a government agency is appointed and dismissed by the Prime Minister on the proposal of the supervising Minister. [Section 71 subsection (4)] The proposal of the supervising Minister is presented to the Prime Minister by the Minister responsible for supervising the quality of public policy and staff policy (Minister of Public Administration and Justice) [Section 71 subsection (5)] The minister responsible for the quality of public policy and staff policy, may object within fifteen days from the sending of the proposal and give back the proposal to the supervising Minister, or forward it to the Prime Minister. [Section 71 subsection (6)] The deputy head of the government office is appointed and dismissed by the supervising Minister on the proposal of the Head of the Government Office. [Section 71 subsection (7)] The head of the government office at the same time making his proposal to the supervising Minister on the person proposed to be the deputy head of the government office - informs the Minister responsible for supervising the quality of public policy and staff policy, who may object within fifteen days after the notification to the proposed person. The objected person may not be appointed deputy head of the government office. [Section 71 subsection (8)] In case of other employees the general director of HAEA exercises the employer's right.

Supervisory functions are according to Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State in the case of a government office are:

- constitution of legal rules under the authorization of law or government decree in responsibility of a government office or a makes a submission to constitute a law or a government decree,
- representation of the government office in front of the Government and the Parliament
- appointment and dismissal the head of a government office according to the rules stated in Section 71, and the exercise of

any other employer's rights in connection with the head a government office,
— the approval of the organizational and operational rules of the government office

only in connection with the foundation, modification and termination of the government office and the appointment and dismissal the head of a government office , the withdrawal of the mandate , and - if the law or government regulation provides otherwise - the exercise of any other employer's rights in connection with the head of a government office, give an obligation to report, and management information of public interest and personal data defined by acts.

41.	**Country** **Spain**	**Article** **Article 8.1**	**Ref. in National Report** **21**

Question/ Comment	Could you confirm the intention to invite an AIEA IRRS mission in the near future?
Answer	Yes, the mission will take place in 2015 May.

42.	**Country** **Spain**	**Article** **Article 8.1**	**Ref. in National Report** **22**

Question/ Comment	What is the annual HAEA budget? What funds do HAEA allocate annually to research activities?
Answer	The HAEA annual budget changes. In general, from 2000 to 2500 million Ft, which equals to ≈ 6.500.000-8.300.000 EUR/year. HAEA allocates annually to research activities approximately 300 million Ft, which equals to ≈ 1.000.000 EUR/year.

43.	**Country** **Spain**	**Article** **Article 8.1**	**Ref. in National Report** **22**

Question/ Comment	Do HAEA have any program to address safety problems reported by plant workers and to protect the whistleblower against any retaliation?
Answer	PAE, Bódis Zoltánné, Juhász László No, we do not have this kind of program.

44.	**Country**	**Article**	**Ref. in National Report**

	Spain	**Article 8.1**	**23**
Question/ Comment	According to the report, the technical support organizations carry out expert and scientific activities not only for the Authority but for nuclear installations as well. These organizations may perform contractual work for several institutions, but a particular expert or scientist is allowed to provide expertise at a given time and for a particular issue exclusively for the operator or the Authority but not for both simultaneously It is clear that there are in place provisions to guarantee the independence of the individual experts when working for the safety authority, but the management line has a strong influence on the work and reports performed by the experts, especially the lower level of the management, such as the technical supervisors. Are there any provisions to guarantee that there is appropriate independence in the management and supervisory line?		
Answer	In all cases when HAEA is contracting with a TSO it is examined whether the TSO partner is working for the licensee in the given task. If necessary HAEA requests the TSO and the licensee to provide an official statement that in the particular case they are not in a contractual connection. Concerning the independence of TSO managers: HAEA does require that the TSOs have a quality management system, which formally provides for verification and approval process for each kind of technicaé support work. On the other hand, the HAEA does not just simply accept the opinion of the TSO organization but, to the extent possible, performs its on review of the case. Additional information is that usually the TSOs are not directly involved in the regulatory assessment of licensing or inspection cases, but rather they are involved in the establishment of the regulatory regime and rules and preliminary substantiation of a regulatory decision.		
45.	**Country** **Spain**	**Article** **Article 8.1**	**Ref. in National Report** **23**
Question/ Comment	Do HAEA have an available plan for crisis communication, according to the best recognized international practices?		
Answer	The Attachment III of the Nuclear Emergency Response Plan of HAEA addresses communication principles in emergency situations. This internal regulation is updated on a regular basis, which gives a chance to implement best practices and international recommendations. However, in Hungary there is a national emergency response system: Crisis Centre is set up in the case of a nuclear emergency situation that managed by the National Directorate General for Disaster Management, Ministry of the Interior (NDGDM). This centre is responsible for coordination of crisis communication.		
46.	**Country**	**Article**	**Ref. in National Report**

	Austria	Article 8.2	8, p21-22

Question/ Comment

The 6th CNS Report indicates that the Hungarian Atomic Energy Authority (HAEA) falls under the Minister for National Development "supervises" HAEA independently of her portfolio.
What activities by the Minister constitute this supervisory function?
Can the supervising Minister, on his/her own initiative, replace the Director-General of HAEA or the senior management of HAEA? If so, how is this prerogative exercised?
Can the supervising President or Prime Minister of Hungary replace the Director-General of HAEA or the senior management of HAEA? If so, how is this prerogative exercised?

Answer

The short answers are as follows:

Q1: The Minister supervises that the HAEA operates in line with the laws. She/he does not have right to intervene in any regulatory decision.

Q2: The Minister cannot replace the DG of HAEA in any capacity.

Q3: The President aor the Prime Minister cannot replace the DG of HAEA in any capacity.

It is possible to clarify the situation by citing legal rules of several acts. According to the act on atomic energy the use of atomic energy shall take place in a manner laid down by laws and under regulatory oversight. The competent authorities shall determine the conditions of the safe use of atomic energy in line with laws and with the consideration of the results of science and technology. These authorities shall be independent of the public administration organizations interested in promotion and development of atomic energy. [Section 5 subsection (2)]
The Government shall be responsible for the direction and oversight of the safe use of atomic energy. The Government takes care of execution of the tasks laid down in this act through the Hungarian Atomic Energy Authority, and the ministers determined in Subsection (1) of Section 20, Sections 22-26 and Section 28. (Section 6)
The Hungarian Atomic Energy Authority shall be a government office. A minister appointed by the Prime Minister shall perform the supervision over the Hungarian Atomic Energy Authority. The decisions of the Hungarian Atomic Energy Authority shall not be modified or annulled by virtue of supervision. (Section 8)
According to Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State a government office cannot be instructed in its' state administrative remit defined by law. [Section 70 subsection (4)]

The decision adopted by the head of the government office cannot be changed in the organizational frames of public administration. It means that no appeal may be lodged against such a decision, only judicial review is possible. [Section 100 and 109 of Act CXL of 2004 on the General Rules of Administrative Proceedings and Services]
The government office has the power of a budgetary body that forms a chapter in the budget. The government office forms a separate title within the chapter of the ministry headed by the supervising Minister.[Act XLIII of 2010 on the central state administration bodies, and the status of members of the Government and Secretaries of State Section 70 subsection (4)]
The head of a government agency is appointed and dismissed by the Prime Minister on the proposal of the supervising Minister. [Section 71 subsection (4)] The proposal of the supervising Minister is presented to the Prime Minister by the Minister responsible for supervising the quality of public policy and staff policy (Minister of Public Administration and Justice) [Section 71 subsection (5)] The minister responsible for the quality of public policy and staff policy, may object within fifteen days from the sending of the proposal and give back the proposal to the supervising Minister, or forward it to the Prime Minister. [Section 71 subsection (6)] The deputy head of the government office is appointed and dismissed by the supervising Minister on the proposal of the Head of the Government Office. [Section 71 subsection (7)] The head of the government office at the same time making his proposal to the supervising Minister on the person proposed to be the deputy head of the government office - informs the Minister responsible for supervising the quality of public policy and staff policy, who may object within fifteen days after the notification to the proposed person. The objected person may not be appointed deputy head of the government office. [Section 71 subsection (8)] In case of other employees the general director of HAEA exercises the employer’s right.
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- appointment and dismissal the head of a government office according to the rules stated in Section 71, and the exercise of any other employer's rights in connection with the head a government office,
- the approval of the organizational and operational rules of the government office

only in connection with the foundation, modification and termination of the government office and the appointment and dismissal the head of a government office , the withdrawal of the mandate , and - if the law or government regulation provides otherwise - the exercise of any other employer's rights in connection with the head of a government office, give an obligation to report, and management information of public interest and personal data defined by acts.

47.	**Country** **France**	**Article** **Article 9**	**Ref. in National Report** **9, p25**

Question/ Comment	Did HAEA notice that having armed guards for physical protection of facilities was not necessarily sufficient to perform an efficient protection?
Answer	No, HAEA has not revealed such a case. Hungary ratified the Convention on Physical Protection of Nuclear Materials approved by the IAEA in 1979 and the Modification of the Convention signed on 8 July 2005, which was promulgated by the Law-Decree 8 of 1987 and the Act LXII of 2008 , respectively. As a consequence, in 2011 the nuclear security regulation was revised in Hungary in line with the IAEA Nuclear Security Series. At the request of the Government in 2013 an IAEA IPPAS mission reviewed the regulatory framework, the regulations and guidelines, the regulatory practices of the Hungarian Atomic Energy Authority and the physical protection systems of nuclear and radioactive materials and associated facilities including Paks NPP. The IPPAS team concluded that the physical protection systems at the visited sites have been significantly enhanced and are in compliance with the latest IAEA recommendations including IAEA Nuclear Security Series No. 13.

48.	**Country** **Pakistan**	**Article** **Article 9**	**Ref. in National Report** **General**
Question/ Comment	Hungary may please share the mechanism adopted by license holder for maintaining open and transparent communication with public.		
Answer	Paks NPP operates the Visitor Centre and the Museum for Nuclear Energetics. Paks NPP has been running the following external activities and practices: Open Day, several prizes being awarded to journalists and scientists, physics education program, support to conferences, presence in exhibitions, maintaining relationship with professional and non-governmental organizations, web site and monthly paper (Atomeromu), press conferences and releases, PR articles and advertisements, presence in TV and radio programs, media dinner, „Energy for our Future" Regional Development Foundation, keeping personal relationship with the Mayors of 120 settlements, relationship within the association of „settlements in the vicinity of nuclear facitilies", special supports to sport clubs and universities. Moreover Paks NPP set up an Information Bus and organized a Road Show all around Hungary.		

49.	**Country** **Spain**	**Article** **Article 9**	**Ref. in National Report** **25**
Question/	Is the licensee obliged to maintain a program to encourage the workers to identify and communicate any safety related deficiency and		

Comment	to protect the whistleblowers against retaliation?
Answer	The plant has a system of reporting low-level events and near misses as well as a system of reporting deficiencies or deviations of any kind including safety concerns. Employees are encouraged to report anything in these two systems even unanimously and there has not been any single cause indicating retaliation by the management.

50.	**Country** **Czech Republic**	**Article** **Article 10**	**Ref. in National Report** **Section 10.2**

Question/ Comment	The report states that „Govt. Decree 118/2011. (VII. 11.) Korm. concerning the implementation of the Act on Atomic Energy obliges the Licensee to prepare a safety policy that lists the Licensee's concepts and objectives related to safety and demonstrates in a convincing manner that the fulfilment of the principle of nuclear safety has priority over all other aspects". Is the Safety Policy an internal document only, or does the HAEA also have a role to play in its development?
Answer	Yes, the Safety Policy of the NPP is an internal document of the operating organisation. It is one of the several attachments to the NPP Management System Manual (together with all other policies, e.g. quality). As such HAEA has no role in its development. But within the framework of its supervision activities HAEA does inspect existence of this document, adequacy of its content in light of the cited requirements as well as the way its statements are reflected in the procedure documents and that, how practices and safety performance (including its indicator values) are in line with the set safety objectives and goals (including the target values of indicators).

51.	**Country** **Korea, Republic of**	**Article** **Article 10**	**Ref. in National Report** **27**

Question/ Comment	Does Hungary have a common definition of nuclear safety culture shared by the regulatory body and plant operators? Has Hungary experienced events caused by a degraded safety culture in the past? If so, please explain the events briefly with the relevance to the defined safety culture. Please share information about measures taken by the government to rectify the weak safety culture and the effectiveness of the measures.
Answer	The common definition of the nuclear safety culture shared by the regulatory body and the plant is based on the documents INSAG-4 (Safety Culture) and INSAG-15 (Key Practical Issues in Strengthening Safety Culture) published by the IAEA in 1991 and 2002

respectively. Definition of safety culture can be found in Nuclear Safety Code volume 10.
The most significant event caused by degraded safety culture occurred in 2003 with the damage of 30 fuel assemblies. Detailed information can be found in the IRS report “DAMAGE OF FUEL ASSEMBLIES INSIDE A CLEANING TANK”, No. 7632 published in 2004, updated in 2005.The major root causes were attributable to degraded safety culture. The corrective actions included a comprehensive safety culture improvement with short term and long term actions in the period between 2004-2008.
This program was called Comprehensive Action Plan (CAP) and included the following specific measures (short term and long term) for improving safety culture:
1. The evaluation of the experience gained during the managerial inspections performed in accordance with regulations included in the procedure became a regular item on the agenda at all levels of managerial meetings including the company management meetings.
2. A task-oriented, systematic training system for employees of the safety organization was elaborated and implemented. The objective of this system was to develop skills in conducting safety inspections, in management of safety issues, as well as appropriate interpretation of safety assessments and conditions.
3. The Improvement Programme of the Management and Organisation System of the company accepted by the Management and the Board of Directors of Paks Nuclear Power Plant was implemented. This program had the following elements:

- Vision and values – To review the corporate goal system
- Optimisation of functioning of the organisation – For exact specification of responsibilities, to enhance decision making and to improve quality system and plant operation generally
- Leadership improvement – To improve managerial knowledge of leaders
- Human improvement – To improve communication and cooperation, attitude to quality
- IT improvement – To support process review and plant control system

4. The company reviewed, improved and rationalized the system of the company’s decision-making mechanisms, as well as of the company forums and meetings. The objective of this activity was to provide that the place of decision making, as well as the person of decision maker and the relevant responsibility can be unambiguously defined, and that decisions are made at that level where the appropriate professional support is available, and that priority of the safety is provided during decision making.
5. The company reviewed the methodology of safety culture surveys, including defining of actions potentially needed. The company has been performing these surveys regularly. The scope of the surveys covers both employees and managers of the company.
6. The regular managerial assessment of the values of safety indicators was introduced and this assessment is performed quarterly.
7. The company holds regular managerial forums at all levels of the organizational hierarchy. The agenda contains constant "elements", for example safety, quality questions, as well as topical issues. The main items of these discussion topics come from the top management, considering the most important questions and tasks of the company, but always emphasizing priority of the safety.
As a result of this improvement program the safety culture level of the plant organization has improved significantly and this

improvement can be seen on the trend of the safety culture indicators, and the regular employee surveys.
In 2013 an additional action plan was defined and implemented in order to "refresh" the employees and managers mind in order to keep the safety culture on the reached high level and prevent a possible decline.

52.	Country Pakistan	Article Article 10	Ref. in National Report General

Question/ Comment

Hungary may like to share the measures taken to assess and improve safety culture at nuclear installations and regulatory body.

Answer

Paks NPP experienced an incident with significant damage of 30 spent fuel assemblies. The root cause of the event was identified as a significant degradation of safety culture of the Paks NPP organization. Subsequently a very broad safety culture enhancement program was initiated and completed in the period between 2004-2008.
This program was called Comprehensive Action Plan (CAP) and included the following specific measures (short term and long term) for improving safety culture:
1. The evaluation of the experience gained during the managerial inspections performed in accordance with regulations included in the procedure became a regular item on the agenda at all levels of managerial meetings including the company management meetings.
2. A task-oriented, systematic training system for employees of the safety organization was elaborated and implemented. The objective of this system was to develop skills in conducting safety inspections, in management of safety issues, as well as appropriate interpretation of safety assessments and conditions.
3. The Improvement Programme of the Management and Organisation System of the company accepted by the Management and the Board of Directors of Paks Nuclear Power Plant was implemented. This program had the following elements:

- Vision and values – To review the corporate goal system
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As a result of this improvement program the safety culture level of the plant organization has improved significantly and this improvement can be seen on the trend of the safety culture indicators, and the regular employee surveys.
In 2013 an additional action plan was defined and implemented in order to "refresh" the employees and managers mind in order to keep the safety culture on the reached high level and prevent a possible decline.

53.	**Country** **Slovenia**	**Article** **Article 10**	**Ref. in National Report** **27**

Question/ Comment Could you describe how are you achieving this objective? What approaches and measures are you using? Especially, based on your experience what can you recommend to other parties, what methods are effective to rise the safety culture standard? For instance how to promote, assess, act-react, feedback, etc. As a regulator?

Answer Training and common understanding of main elements of safety culture (SC) are the key of the improvement the level of SC. HAEA informs the Licensee on findings related to SC gained from events investigation and inspections and requests action to correct them. Licensee has to report annually the activities and self-evaluation related to SC improvements.

Systematic data collection and analyses from lessons learned of events and safety performance indicators related to attitude to safety help to indentify negative trends and weaknesses related to safety culture. Approx. 25 indicators have been used for evaluation since 2001. HAEA publishes the annual report on the results the evaluation of the Licensees' safety performance which contains safety culture related data and evaluation based on events and inspection finding, safety performance indicators and Licensee's reports. Open discussion between the Regulatory Body and Licensee has significant influence to identify problematic areas for improvement of safety culture. Regular annual meetings have been organized between HAEA's and Licensee's management, which also serves the improvement as it is usually one of the topics of the meetings.

54.	**Country** **Spain**	**Article** **Article 10**	**Ref. in National Report** **28**

Question/ Does HAEA conduct periodic internal or external safety culture assessment of its own organization? Has CSNC carried out any

Comment	safety culture assessment?
Answer	No, HAEA does not have formal safety culture assessment. We have many indicators to measure our performances within our QA program.

55.	**Country** **Spain**	**Article** **Article 10**	**Ref. in National Report** **28-29**

Question/ Comment	Does the licensee conduct periodic internal or external assessment of safety culture? Does the HAEA require a safety culture assessment when symptoms of licensee declining safety performance are detected?
Answer	Yes, Licensee performs periodical internal assessment of safety culture. Licensee shall report the summary of their activities related to improvement of safety culture in the annual report to HAEA. HAEA requests action based on results of event investigations and safety performance indicators. Training and common understanding of main elements of safety culture (SC) are the key of the improvement the level of SC. HAEA informs the Licensee on findings related to SC gained from events investigation and inspections and requests action to correct them. Licensee has to report annually the activities and self-evaluation related to SC improvements. Systematic data collection and analyses from lessons learned of events and safety performance indicators related to attitude to safety help to indentify negative trends and weaknesses related to safety culture. Approx. 25 indicators have been used for evaluation since 2001. HAEA publishes the annual report on the results the evaluation of the Licensees' safety performance which contains safety culture related data and evaluation based on events and inspection finding, safety performance indicators and Licensee's reports. Open discussion between the Regulatory Body and Licensee has significant influence to identify problematic areas for improvement of safety culture. Regular annual meetings have been organized between HAEA's and Licensee's management, which also serves the improvement as it is usually one of the topics of the meetings.

56.	**Country** **Spain**	**Article** **Article 10**	**Ref. in National Report** **28-29**

Question/ Comment	Are the organizational changes analyzed in writing by the licensee to make sure they will not impair safety? Could you provide some details on those analysis and the criteria applied to them?
Answer	There is a mainly general basic approach exists to all modifications which is determined by legal requirements set in the Nuclear

Safety Codes irrelevant wheter the change is technical, organizational, organizational or solely of documents. The first step of that approach is to prepare by the operational organization a preliminary safety evaluation of the possible impacts the change may have on the safety. First this document shall describe the changes and a reasoning of those. Then, on the basis of broad understanding answering of a standard set of questions and on the basis of answers categorization of the changes is required. First category changes would require a substantial impact on safety (these require modification of the operating licence). To belong to this category at least one of the determined 5 questions requires a "yes" answer. From these practically only 1 may be in relation with organizational issues, namely: "Does the modification lead to change of those operational requirements which define basically the operation of the nuclear facility?" (A theoretical example could be: Now we have a station shift supervisor for 4 units and a common emergency organization for the entire 4 units. E. g. if the change would mean dividing the whole plant to two twin-units and having two independent shift supervisors, one for each, and a divided emergency organization, very probably the answer to the cited question would be yes.) When there are only "no" answers to all 5 questions, they shall go to a further set of 3 questions. If at least one of these questions is answered "yes", then it will be a category 3 change what doesn't need a regulatory license (approval) In case of organizational changes only one question from these 3 is relevant, and it is also very general: "Could the change have safety implication?" (Changes which do not fall into category 1 and 3 are of category 2, requiring regulatory licence for implementation but the facility licence shall not be revised.) For answering all the questions the basis is the preliminary safety evaluation. Normally for organizational changes the evaluation will consist of going through all the requirements on organization, on personal responsibilities, workload and fitness of workers in certain positions, qualification, etc. contained in the Act on atomic energy, in the governmental decree 118/2011. and in the Nuclear safety Codes. These relate among others to the responsibility of the operating organization (e.g. in relation to contractors), of the general manager, independence of the safety unit. Should be the character of proposed changes alter the fulfilment - or at least way of fulfilment - of one or more requirements, than it shall be considered as having impact on safety. The categorization with answers to all aforementioned questions and the supporting preliminary safety evaluation shall be made known to the regulatory authority through a dedicated computer channel for approval. On the basis of the categorization documents, the regulator may ask further information, and then after consultation with the operating organization set a different category. After approval depending of the category the licensee may proceed solely according internal procedures, or prepare a license application with a more detailed safety evaluation for the assessment of the authority followed by issuance of a license.

57.	**Country** **United States of America**	**Article** **Article 10**	**Ref. in National Report** **10.2**

Question/ Comment Please further describe the responsibilities of the Safety Director. For example, is the Safety Director responsible for plant safety (e.g. safety of employees and their work environment) and responsible for radiological safety of employees and the public?

Answer	According to the Hungarian Nuclear Legislation a nuclear power plant shall have an internal body responsible for the oversight of nuclear safety that is independent of the operations, maintenance and engineering. This body (division) headed by the Safety Director directly reports to the Director General of the plant. The overall responsibility for the nuclear safety of the plant itself rests with the Director General of the plant organisation. The responsibility of the mentioned safety division is to monitor the nuclear safety of the plant that includes monitoring of the nuclear safety, industrial safety, radiological safety (both the plant employees and the public) and the environmental impact of the plant as well as the emergency preparedness and emergency response within the plant. In accordance with this organizational units dealing with nuclear and operational safety, event investigation and operational feedback, radiological and environmental protection, fire and industrial safety, quality and regulatory relations, safeguards, security, emergency preparedness are reporting to the Safety Director.

58.	**Country** **Canada**	**Article** **Article 11.1**	**Ref. in National Report** **Page 32, Section 11.2.1**
Question/ Comment	The report discusses the commissioning of Units 5 and 6 of the Paks Nuclear Power Plant. Is any consideration being given to constructing a new nuclear power plant at another location? What locations are being considered?		
Answer	This day the only considered location for a new nuclear power plant is being the Paks site. Some other possible sites had been assessed on an earlier stage of planning but a Parliament decision fixed the site of the new units without substantial examination of other sites.		

59.	**Country** **France**	**Article** **Article 11.1**	**Ref. in National Report** **11.1.1, p30**
Question/ Comment	What was the reason to remove the legal guarantee in 11 October 2009 re the income of HAEA should be used?		
Answer	It was a Governmental decision. The Parliament has approved this modification of the Atomic Act. There have been no detailed reasoning.		

60.	**Country** **Spain**	**Article** **Article 11.1**	**Ref. in National Report** **30-31**
Question/	According to the report, the Authority is financially independent of nuclear installations and its funding is sufficient for carrying out		

Comment	its duties efficiently. But the report identifies problems to contract or retain highly qualified technical personnel in HAEA, due to the reduced salaries in the public administration. Does it mean that HAEA is not completely financially independent? Could it be appropriated to introduce some modification in the law or in other legally binding document in order to assign to HAEA the power of establishing its own salary policy, giving that enough funds are available? Could this be a viable way of solving the problems?
Answer	The HAEA is part of the governmental structure as a budgetary organization. Its annual budget is stated in the Law determining the annual budget of Hungary. The hindrance of establishing an own salary policy is the fact that the great majority of employees of the HAEA are government officials. The classification and rating of government officials are stated in CXCIX of 2011 Act on civil servants. The salary of a government official depends on the rating and classification so the latitude is narrow in this regard. Remedy could be the allowance on the basis of *scope of activities* which is laid down in the 1004/2013 Government Resolution in confines of the carrier system of government officials.

61.	**Country** **Spain**	**Article** **Article 11.1**	**Ref. in National Report** **30**

Question/ Comment	In the hypothesis that a new economical agents wanted to invest in Hungarians NPP, does the Atomic Act or the regulation require this agents to be authorized? Does HAEA have any possibility of assessing the economical and technical capacities of the new agents to maintain the safe operation of the plants?
Answer	The Paks NPP is a state owned company. There is no intention to change this position. According to current information, the new NPP should also be state owned. Anyway, the Nuclear Safety Code includes detailed requirements for the operational organisation. It covers the required resources, capabilities, competencies.

62.	**Country** **Spain**	**Article** **Article 11.1**	**Ref. in National Report** **32**

Question/ Comment	Do the regulations on training apply only to the licensee staff or do they include also requirements applicable to employees of external suppliers? Does HAEA oversight in any way the capabilities and training of employees of external suppliers?
Answer	Yes. Regulation contains the same requirements on training for internal and external employees. The licensee has primary responsibility to assure the appropriate capability of employees. HAEA oversights the training process and training program of the

	Licensee. That includes the review of training material, qualification process, training records and effectiveness of training.		
63.	**Country** **Spain**	**Article** **Article 11.1**	**Ref. in National Report** **32**
Question/ Comment	Does the training program for selected personnel (main control room operators and shift, safety engineers, etc…) include training in Severe Accident Management Guidelines? Is this item included in the examinations?		
Answer	Yes. The introduction of the SAMGs was preceded by a targeted training program for the personnel. This program is composed of a classroom theoretical module in addition to a simulator based practical training for the CRO staff only. Since the completion of the relevant initial training period, the training of Severe Acident Management has been made an integral part of both classroom and simulator continuing training programs. The licensing exam scope has also been extended with the Severe Accident Management topics. In Paks, the Control Room Operations staff is required to take a practical exam at the end of the annual simulator retraining period. At the moment, the exam scenarios do not feature any exercises that may require the use of SAMGs since the scope of simulation does not permit that. As a result of a simulator upgrade now under preparation, such exam scenarios will be possible.		
64.	**Country** **Canada**	**Article** **Article 11.2**	**Ref. in National Report** **Page 31, Section 11.2.1**
Question/ Comment	The report seems to suggest that there may be a staffing issue at the Authority – difficulty retaining young people, not being able to backfill retirees and a projected workload increase. What are the contingencies planned or in place to deal with this?		
Answer	HAEA continuously makes efforts to obtain opportunity to hire additional personel. This looks now to be possible after the intergovernment agreement on new units. On the other hand efforts are also exerted to raise the salaries of the employees currently limited by the act on civil servants. The salaries are currently not competitive in the market. A suggestion of a pilot project is ready to be launcehd by the Government that intends to differentiate between the various types of work.		
65.	**Country** **France**	**Article** **Article 11.2**	**Ref. in National Report** **11.2.1**
Question/ Comment	The loss of competence in the HAEA is a major issue. Given that the Authority is partially funded by licensees' supervision fees, why not simply considering increasing these fees to raise salaries at the same level as they are within nuclear industry? Reasonably,		

licensees could not complain while they keep paying higher salaries.

Answer — The carrier system (including the salary system) of governmental officials is given; controlled and regulated by Act CXCIX of 2011 on civil servants. The amount of the licensees' supervision fee is defined in section 19 of act on atomic energy. To make the suggested decisions the HAEA has not enough competence. The HAEA is part of Hungary's public administration and there are unified rules to be applied.

66.	**Country** **United States of America**	**Article** **Article 11.2**	**Ref. in National Report** **11.2.1**

Question/ Comment — This section contains a statement: "In addition to new professional challenges…..and more seriously hindered by the exodus of the nuclear and radiation safety graduate workers….." Please explain the plans to address the projected impact of the exodus of trained and qualified work force on operations at Paks.

Answer — This isseu is not relevant for operation at Paks. This problemn was identified at HAEA and the report explains actions and plans to fix this problem at HAEA.

67.	**Country** **Pakistan**	**Article** **Article 12**	**Ref. in National Report** **General**

Question/ Comment — Hungary may like to share information regarding the typical errors that have been observed after analysis of events connected with human activity and organizational factors.

Answer — As a result of the analyses of last year reportable events, we observed that the typical human errors fell into the category of Violation of Requirement/Procedure (VRP) and Attitudes less than adequate (ALTA). Within the VRP category most frequently: the personnel didn't use or follow the procedure/instruction. Within the ALTA category most frequently: lack of confidence and inattention to details has been occurred. As a root cause of certain events the following problems have been identified: Definition of responsibilities LTA; Management attitude LTA; Procedure criteria LTA; Human resource deployment LTA.

68.	**Country** **Spain**	**Article** **Article 12**	**Ref. in National Report** **33-34**

Question/ Comment	There is a common agreement on the influence of organizational factor in the human performance. Consequently, not only human factors but also organizational factor should be taken into account in the analysis of operational events. The National Report states in pg. 33 that "In accordance with the expectations of the Authority, the Licensee shall put emphasis on the identification of human and management errors during event investigations." And in an additional paragraphed in pg. 34 it is said that "Any human error found during an investigation should be analyzed in detail." Which methodology do the licensees apply for those event investigations? Are HPES or MORT (Management Oversight and Risk Tree) methodologies been used in the analysis of some relevant events?
Answer	Investogators at Paks NPP use specific RCA method developed by ENCONET Consulting Ges.m.b.H., Austria. This procedure is descriptive. It was specifically developed to meet the needs of safe and reliable operations of the Paks NPP. It was originally an adaptation of the basic structure and contents of the Human Performance Investigation Process (HPIP) of the Nuclear Regulatory Commission (NRC) of the USA and the ideal safety management systems in the Management Oversight & Risk Tree (MORT) of the Department of Energy of the USA. Nevertheless, significant modifications and amendments were made to satisfy the specified interests and practices on safe and reliable operations at Paks NPP. Among others, all the three basic elements (Equipment, Personnel and Procedures) in performing any tasks are included in the RCA. The interactions between Equipment and Human (both as individual and as organization) are further explored. Safety culture at three levels (i.e. policy establishment, management commitment and personnel response) is as a whole all considered.

69.	**Country** **Spain**	**Article** **Article 12**	**Ref. in National Report** **Pg. 34**
Question/ Comment	As a consequence of the Fukushima accident, are the licensees or HAEA established any research program related to human behavior under extreme conditions?		
Answer	There was not specific research program established by HAEA or PAks NPP to address human behavior based on experiences of the Fukushima event.		

70.	**Country** **Spain**	**Article** **Article 12**	**Ref. in National Report** **Pg. 34**

Question/ Comment Do the licensees have in place a program to control the consumption of alcohol and drugs while on duty? Is there any legal requirement for such control?

Answer

In compliance with the stipulations of paragraph (4) in Article 10 of Act CXVI / 1996 on Atomic Energy MVM Paks Nuclear Power Plant Llc. does have in place a policy regarding drugs and alcohol. Under this policy the management of the Company is committed to safeguarding the safety, physical and mental health of employees, maintaining the fitness for duty at the highest possible level and welfare of staff. Alcohol and drug abuse is a critical risk in achieving these objectives. For managing this risk the employer has implemented a program for the alcohol- and drug free workplace where respect for an individual concomitant is associated with the effort to keep the environment free of alcohol and drugs. Regular checks carried out in the frame of this program to detect the consumption of alcohol and drugs are not just an option but the fulfillment of corporate obligations.

The management of MVM Paks Nuclear Power Plant Llc. has designed and implemented a detailed procedure for checking compliance with and sanctioning of alcohol- and drug-free condition.

The key components of the policy are summarized below.

1. Checking the staff for the presence of liquor or agents of alcohol content in the organism

For all staff inside or entering the territory of the nuclear power plant MVM Paks Nuclear Power Plant Llc. as operator, employer and contracting party prohibits the consumption of alcohol.

Types of checks carried out:

- *Random selection;*
- *Ascertaining suspected alcohol consumption;*
- *Self-checking;*
- *Targeted checking.*

2. Checking the drug free condition

During working hours the staff of health experts of the occupational health unit, and outside the regular working hours the ambulance officer of the plant ambulance service are authorized to carry out checks for ascertaining the drug free condition of people.

Types of checks carried out:

- *Checks carried out as a daily routine of the staff of the occupational health unit;*

- *Checks carried out before employment as part of the medical fitness test;*
- *Checks carried out as part of inspections upon the order of the head of the labor and fire safety unit and the plant security unit;*
- *Checks carried out upon the request of the competent executive up to the head of section, including the engineer on duty and the block manager on duty;*
- *Checks carried out upon the initiative of the person responsible for security in the case if symptoms concomitant with drug abuse are revealed;*
- *Checks carried out upon feedback from the random selection system (enhanced security checks).*

3. Program for the prevention of alcohol and drug abuse

Along with checks and inspection the management of the Company pays particular attention to prevention; for this reason a program for the prevention of alcohol and drug abuse has been implemented. The objective of this program is to provide comprehensive information and explanation regarding the nature of alcohol and drug abuse and addiction, the adverse effects thereof on job performance, health and private life, and to offer support in health- and life coaching, strengthening healthy habits and in developing related skills and aptitudes.

71.	**Country** **Canada**	**Article** **Article 13**	**Ref. in National Report** **Page 37, Section 13.5**
Question/ Comment	With the difficulties to retain staff, is the Authority (HAEA) able to complete all annually scheduled inspections? If necessary, how does the Authority prioritize which inspections must be completed?		
Answer	The Authority (HAEA) is able to complete all annually scheduled inspections. I normal cases – because of difficulties to retain staff - we don't cancel the scheduled inspections. There is a possibility to postpone the inspection if – for example – the regulation or the procedure is changing. Usually less than 10% of the inspection is postponed and not all of them because of lack of resources. The inspection plan takes account of the resources available and the planning process considers the safety significance.		
72.	**Country** **Czech Republic**	**Article** **Article 13**	**Ref. in National Report** **Section 13.4.1/page 36**
Question/ Comment	A system of indicators is used to assess the proper operation of a nuclear power plant control system. Is not only the functionality of the management system but also its effectiveness assessed in this way? Describe the method of evaluation.		

Answer	Specific indicators and target figures have been associated with the corporate strategic objectives to assure the monitoring of pro rata progress of implementing the key objectives. The management conducts quarterly reviews of the implementation of strategic objectives therefore any necessary measures can be taken in terms of the eventual variation from the pro rata targets. In pursuit of the international nuclear practice MVM Paks Nuclear Power Plant Llc. has designed and implemented a System of Safety Performance Indicators for the ongoing monitoring and checking of the safety level. The indicators are evaluated quarterly and corrective actions to improve operations in the affected areas are designed and implemented in terms of the changing target values, which may be of strategic or yearly horizon, or may call for ad-hoc measures. There is also a comprehensive process control system in place, the recent upgrade of which involves the implementation of a system of indicators for the measurement of mission-critical processes. The objective is to provide a tool facilitating corrective measures by objective measurements for the staff responsible for process control and operation. Further, it is of special importance that efficient control of processes affecting the largest extent the attainment of corporate strategic objectives will be achieved through the monitoring of key indicators.

73.	**Country** **Czech Republic**	**Article** **Article 13**	**Ref. in National Report** **Section 13.4.1/page 36**

Question/ Comment	How are corrective actions implemented in resolving disagreements to improve the management system based on evaluation results, and how? Please describe this in more detail.
Answer	Management revisions of the management system supported by the results of self-assessment (at the level of processes and organization units), internal audits and reviews by accredited entities take place annually. Wherever the performance figures call for it, the management reveals the eventual weaknesses and requests corrective measures for the affected process or organization unit. Licensee has to report the progress of all corrective action in its (obligatory periodic report) Quarterly Report.

74.	**Country** **France**	**Article** **Article 13**	**Ref. in National Report** **13.4.3, p37**

Question/ Comment	Is there a specific process to address the health and safety issues of suppliers' workers within an NPP? Are working conditions of suppliers considered to be safety-related?

Answer	Q1: The NPP's management system incorporates a process for contractors to comply with nuclear safety standards and a set of criteria required to verify the compliance of contractors with the standards. Contractors carrying out works at the nuclear power plant must comply with the same health-related and training specifications (such as labor and fire safety, radiation safety, etc.) as the corporate staff of Paks NPP. Q2: The contractor workers are treated the same as plant's normal staff. It means that there are safety related and non-safety related jobs.

75.	**Country** **Spain**	**Article** **Article 13**	**Ref. in National Report** **Pg. 35**

Question/ Comment	According to the report, HAEA has granted an ISO 9001:2000 certifications valid until March 2015. The ISO 9001: 2000 certifications don't include the same requirements as IAEA GS-R-3. Has HAEA carried out a detailed analysis of the differences and provided additional means to fulfill GS-R-3 requirements? Does HAEA currently have in place a Management System Manual that includes the GS-R-3 requirements?
Answer	Q1: Taking into account that the GS-R-3 requirements are based on the ISO 9001:2000 requirements, we have not carried out detailed analysis of the differences. Nevertheless, HAEA performs a self-assessment in 2014 and invited the IAEA to conduct an IRRS mission to Hungary in 2015, which will show us the differences, if any, and provide additional means to be fully incompliance with GS-R-3 requirements. Q2: As we mentioned earlier, HAEA started the IRRS self-assessment in 2014. According to its results (findings and recommendations), HAEA will prepare an action plan which will include the necessary measures in order to be in full compliance with GS-R-3 requirements as well.

76.	**Country** **Spain**	**Article** **Article 13**	**Ref. in National Report** **Pg. 36**

Question/ Comment	Does the licensee have in place any program or precautions to prevent non-conforming, counterfeit, fraudulent or suspect components to be introduced in the plants?
Answer	Yes, the NPP has. The basis of all controls is laid down beforehand in the procurement documents, what is stipulated by the compulsory Nuclear Safety Code requirement and is transposed into procurement procedure of the NPP. The licensee operates a four

level quality control system, and the activities at each level are exactly specified in procedures according to nuclear safety class of the item. The incoming parts, components are going through many steps of checks from the factory inspection, through the incoming check and the pre-installation tests ending with commissioning. These checks are performed in coordination by the technical and the quality control sections. Each checking process and the handling of non-conformances are regulated in detail in relevant procedures.

77.	**Country** **United States of America**	**Article** **Article 13**	**Ref. in National Report** **13.1**

Question/ Comment

The second paragraph states that "There are still certain professional areas where Hungarian directions and standards have yet to be prepared".

(1) Please explain what these areas are
(2) Provide a timetable for completion of these directions and standards upgrades.

Answer

(1) These areas include:
- preliminary decommissioning plan of nuclear power plant,
- the construction licensing documentation of nuclear facilities,
- conducting modification of research reactors (organizational and technical)
- conducting and supervision of spent fuel store modification (organizational and technical)
- rules for use of standards

(2). Elaboration of missing regulatory guides is included in the program of HAEA for 2014.

78.	**Country** **Canada**	**Article** **Article 14.1**	**Ref. in National Report** **Page 39, Section 14.1.2**

Question/ Comment

Please advise on the progress to date regarding the implementation of each of the 169 safety measures.

Answer

Key corrective measures: Any failure or delay to take such measures contributes to the increase of operation risk, therefore they constitute the prerequisite of validity of the operation license. 32 of the 33 tasks have been completed; the completion of one task is in progress.

- The task to be completed is the restoring to the pre-accident condition of the spent fuel pool of Block 2. In 2003 thirty 30 fuel rods were damaged during chemical cleaning in a separate container; these fuel rods were placed in wet shells in the spent fuel

pool. In 2013 the shells were dried and provided with hermetic seal. The fuel rods will be removed from the nuclear power plant in 2014.

Major corrective measures: Any failure or delay to take such measures contributes to the increase of operation risk and in the longer run hinders compliance with the conditions and circumstances specified in international safety standard. 75 of the 77 tasks have been completed; the completion of two tasks is in progress.

- By June 2014 the controllers of quick release valves outside the hermetic space will be completed.
- ASME BPVC has been introduced in Units 1-3, and it will be introduced in Unit 4 after the general overhaul in 2014.

Supplementary corrective measures: These measures do not affect notably the operation risk; therefore they have been implemented without the control of the supervision authority. Each of the three tasks has been completed.

Temporary exemptions from compliance with some new specifications of the Nuclear Safety Policy (NSP): The related NSP specifications have been grouped into 9 categories, of which partial non-compliance still persists in two groups.

- Compliance with NSP specifications associated with the implementation of Instructions to Manage Severe Accidents is scheduled to December 2014.
- There were several sub-tasks in the category of non-compliant NSP specifications associated with standby systems:
    - Each of the 32 tasks has been completed;
    - Three tasks can be resolved in the framework of future reconstruction of control engineering systems;
    - Approval for the extension of deadline for one task – modification of the rotator motor of standby cooling water drum filters and the control circuit of the associated gate valve for washing – has been requested; this task will be completed in the course of general overhaul in 2014.

Correction of deficiencies revealed during the revision of the Final Safety Report: Each of the 19 tasks has been completed.

Compliance with the obligations to report on the progress of corrective measures carried out in response to the inspection by the competent authority: Each of the 17 tasks has been completed.

Corrective measures in progress at the time of drafting of IBF without any associated deadline: Each of the 10 tasks has been completed.

79.	Country Czech Republic	Article Article 14.1	Ref. in National Report page 38

Question/ Comment Which type of safety assessment will the NPP licensee have to submit if he applies for an NPP life extension?
Do you assume that your National Authority will issue a new Operating Licence for the next 10 years or for a shorter period?

Answer Q1: The proof and justification of the activities shall be submitted as supported by the necessary safety assessments:

- Screening and scoping SSCs for service life extension scope (selection of passive and long lived components)
- Integrated assessment of ageing of passive long lived components
- Activites for condition maintenance for the extended lifetime
- Time limited ageing analyses
- Justification of availability of resources for extended operation

Q2: The service life extension license for unit 1 was granted at the end of 2012. The license application requested and the HAEA granted an operation license for 20 years. Irrespective of that there is a 10 years cycle of Periodic Safety Reviews, the next of which will take place in 2018. As a conclusion of that process the license can be withdrawn or limited in time or left unchanged.

80.	Country France	Article Article 14.1	Ref. in National Report 14.1.1, p38

Question/ Comment Where does HAEA get "the known, most recently developed international technology and safety levels" and "internationally accepted good practice"? In what extend are levels and practices for reactor technology different from VVER-440/V-213 also examined?

Answer HAEA follows the IAEA requirements and guides and the WENRA reference levels, especially the reference levels of the design basis extension; and participates in experience feed-back activities, mentioning first the event and accident evaluation of the EU „Clearinghouse” in Petten (Holland). In the Hungarian NPP the safety analysis went over the original design basis and several results of the analysis against the design basis extension had already lead to further safety improvement measures, even before Fukushima. The analysis will be continued during the next 2-3 years in specific topics, resulted from the latest WENRA reference levels and the

relevant lessons from the Fukushima case.

The ageing management of mechanical parts, including material testing, and the monitoring of maintenance effectiveness is running on ASME OM Code basis, which was adopted in Hungary. These activities are evaluated and inspected by HAEA, it has already become a permanent task during the recent years. From legal aspect these activities are controlled by regulatory decisions, which are listing out expectations and date dead-lines.

81.	**Country** **Germany**	**Article** **Article 14.1**	**Ref. in National Report** **14.1.1,, Page 38, Annex 2,**

Question/ Comment Between 2006 and 2009 a significant power uprating at all units of Paks NPP from 440 MW to 500 MW has been accomplished. Did the process of potential faster ageing of relevant equipment lead to additional requirements from the regulatory side (frequency of inspections, of periodic safety review, etc)?

Answer First of all we should make a correction. Between 2006 and 2009 only an 8% uprating of the thermal power (from 1375 to 1485 MWth) was achieved and it brought an increment of the electric power from about 464 to about 500 MWe. The difference in the increment of electric power (from 440 to 464 MWe) is because of previous upgradings in the secondary circuit (replacement of turbine condensers and reconstruction of turbines) that resulted in the enhancement of the thermal efficiency.
Regarding the aging processes a comprehensive investigation of the equipment and components was carried out by an expert research institute (VEIKI). They investigated also the correlations between the power uprates and the subsequent lifetime extensions. The main conclusion was that for most of the equipment and components the effect of the power uprates on the aging processes is negligible.
The most affected components are the reactor vessels and the steam generators. Detailed experimental and analytical investigations showed that the reactor vessels have enough margins against the excess loading of neutron fluence due to power uprates even taking into account the subsequent lifetime extensions, as well. For steam generators it was shown that the measures of the Utility's normal aging policy cover reliably the effects of the power uprates, as well.
It was also pointed out that aside from a very detailed special investigation procedure applied at the first startup of the units there was no need to modify any periodic inspections of the equipment and components due to the power uprates.

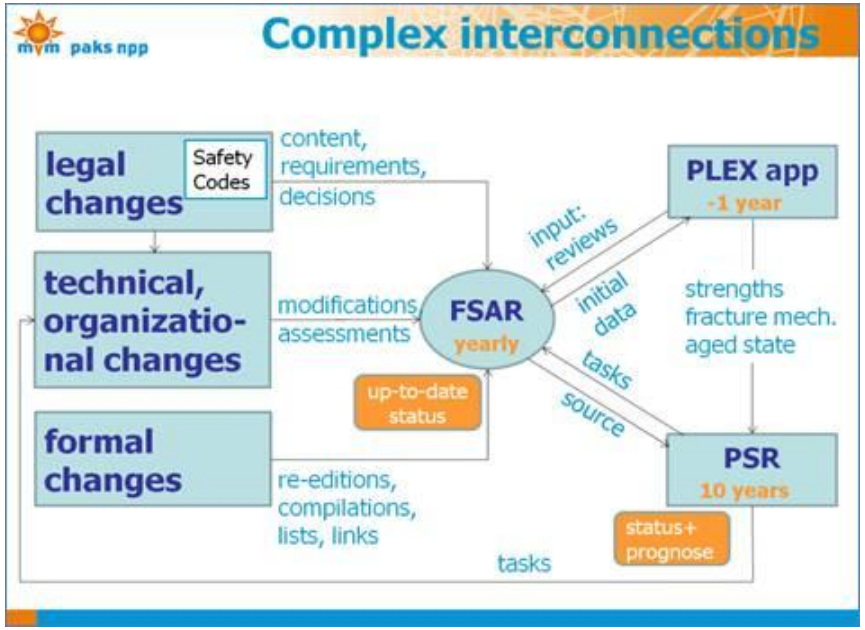
82.	**Country** **India**	**Article** **Article 14.1**	**Ref. in National Report** **Page 38 subsection 14.1.1**

Question/ It is mentioned in the report that as the government decree 118/2011(VII.11) the final safety analysis report of NPP should be

Comment updated annually so that the FSAR can serve as an authentic and up to date reference document. In view of this requirement, can Hungary provide details of the basic safety factors which are updated annually. Is there any special merit in updating the FSAR annually?

Answer The yearly updates do not follow the safety factor logic.

If there are changes in nuclear legislation (e.g. alteration of Nuclear Safety Code) and hardware/organizational modifications at the NPP or even some motivation to do formal changes in document (new redaction, combination/deletion of certain subchapters, listings, links etc. for better usability) these are initiating a set of single FSAR updates. For instance the version 8 of FSAR which were submitted to authority in 15 December 2013 incorporated text changes in almost 100 topics. In individual cases certain topics – due to new safety code – contained several thousands of single new text insertions/deletions FSAR containing 20.700 pages as combined for the 4 units.



For more details see the following document on the Paks NPP website:

Katona T., Ratkai S., Kovacs F.: The connection between the Final Safety Analysis Report (FSAR), the Periodic Safety Review (PSR) and the service life extension, Paks, 2001

http://paksnuclearpowerplant.com/download/1667/Final%20Safety%20Analysis%20Report%20connection%20.pdf

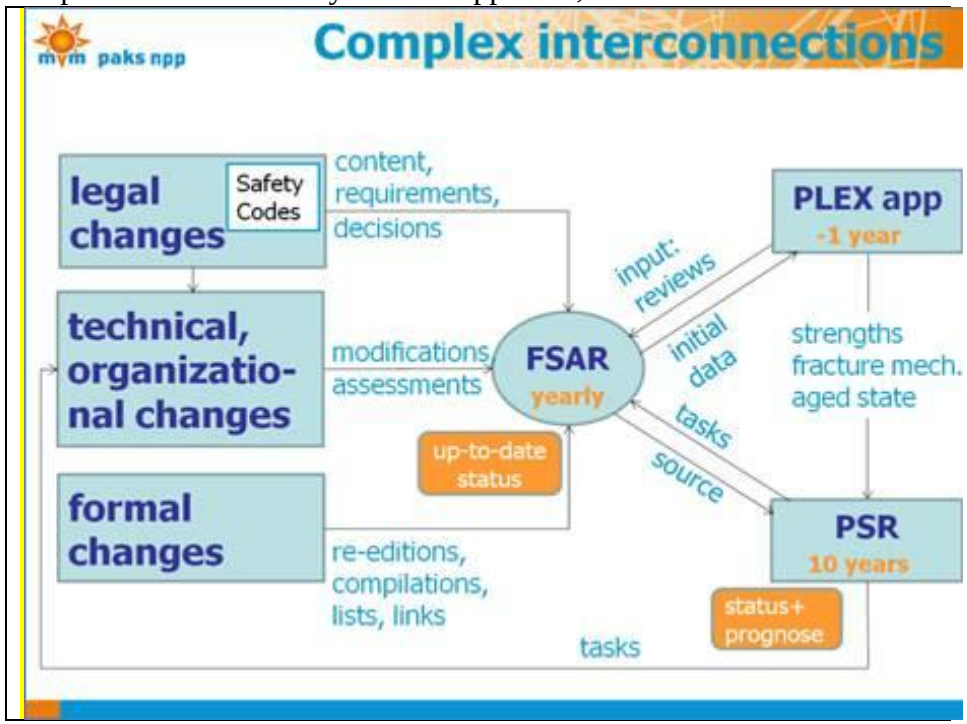
83.	Country Slovenia	Article Article 14.1	Ref. in National Report 38

Question/ Comment

Can you list the most relevant safety issues which probably wouldn't be discovered if PSR approach have not been applied?

Answer

If you look at the connections among the FSAR, PSR amd PLEX application docs, you can understand that the omission of a relevant safety issue is very unlikely. Nevertheless we do PSR, because its main features and added values are not only the comprehensiveness and systematic approach, but in the time frame - aside of snapshot - the retrospective and predictive viewpoints.



For more details see the following document on the Paks NPP website:
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http://paksnuclearpowerplant.com/download/1667/Final%20Safety%20Analysis%20Report%20connection%20.pdf

84.	**Country** **Spain**	**Article** **Article 14.1**	**Ref. in National Report** **38**

Question/ Comment	What activities are carried out by HAEA in relation to the annual updating of the Final Safety Report? Are these updating authorized? Does HAEA inspect or check some specific aspects? Is there any periodic inspection on this subject?
Answer	If safety significant technical, organizational or document modifications are carried out then it is mandatory to attach the change of the respective FSAR chapters to the license application. The occurrence of the modifications in the FSAR is appoved during the licensing process. The licensing procedure itself contains the on-scene inspection of the modification or any other regulatory activity that might be necessary for the assessment of the case. When the annual update is submitted, the HAEA asseses it and checks if all the modifications are included and if all changes in the FSAR are correct and acceptable. In addition to that, usually some chapters are designated for an in-depth review in the course if assessment of every updates.

85.	**Country** **Spain**	**Article** **Article 14.1**	**Ref. in National Report** **Pg. 39 and Annex 2**

Question/ Comment	Are the ageing of the active components included in the ageing and life management program? Does HAEA perform any inspection or checking on the way in which the licensee is carrying out the active and passive component ageing control?
Answer	According to the Hungarian Nuclear Safety Codes maintaining the technical condition of the components could be managed by four ways: *http://www.haea.gov.hu/web/v2/portal.nsf/download_en/EB7ED918B27C63F0C1257A990042DBE0/$file/118_2011_4.pdf)* *a)* safety analyses, *b)* environmental qualification and its retention, *c)* operating ageing management programs,

d) monitoring the efficiency of maintenance (e.g. Hungarian Maintenance Rule)

Therefore management of the active safety functions of the component is based on the monitoring of the Maintenance Effectiveness (Hungarian Maintenance Rule). Also, it is required by the Hungarian Safety Regulatory Authority (HAEA) to prepare and submit for approval reports for the conducted Ageing Management programmes (for passive components, annually) and for the performed Maintenance Effectiveness Monitoring activities (for active components, quarter yearly).

86.	**Country** **Spain**	**Article** **Article 14.1**	**Ref. in National Report** **Pg. 39 and Annex 2**

Question/ Comment Are there in the Paks NPP any buried pipe? If the answer is yes, does the licensee have special programs to check and control the degradation mechanisms than can affect this kind of pipes?

Answer There are two different Aging Management Programmes (AMP) applied at the Paks NPP for the buried pipelines (subsurface piping). An AMP (pogramme1) deals with those piping which material made from the non-corrosion resistant steels, which operate under raw or purified water. The other AMP (pogramme2) valid for corrosion resistant steels, which contain raw and/or cleaned water.

The aging mechanisms monitored within the programme1 are:	The aging mechanisms monitored within the programme2 are:
• generic corrosion; • erosion; • erosion accelerated corrosion; • microbiological corrosion; • wearing; • deposition;	• generic corrosion; • microbiological corrosion; • wearing; • loosening; • deposition;

87.	**Country** **Spain**	**Article** **Article 14.1**	**Ref. in National Report** **Pg. 39 and Annex 2**

Question/ Comment Has HAEA issued any requirement to address the impact of aircraft crash or terrorist attack on the Paks Nuclear Power Plant?

Answer The corresponding requirements are still in preparation.

88.	Country Spain	Article Article 14.1	Ref. in National Report Pg. 46

Question/ Comment Could you provide a summary of the gaseous and liquid discharged by each unit of Paks NPP for the last three years?

Answer The gaseous and liquid discharged by each twin-unit (Unit 1-2 and Unit 3-4) of Paks NPP is provided below. It is included in the Annual Report of Radiation Protection Activity at Paks NPP. You can see the values of 3 years (2010-2012) in next tables.

Liquid discharges in 2010-2012

	Liquid discharges in 2010 [Bq]				Liquid discharges in 2011 [Bq]				Liquid discharges in 2012 [Bq]			
Isotope	**from Unit1&2**	**from Unit3&4**	**from common building Unit 1-4**	**from secondary side Unit 1-4**	**from Unit 1&2**	**from Unit3 &4**	**from common building Unit 1-4**	**from secondary side Unit 1-4**	**from Unit1&2**	**from Unit3&4**	**from common building Unit 1-4**	**from secondary side Unit 1-4**
^{3}H	**1,26E+13**	**1,56E+13**	**7,08E+09**	**2,97E+08**	**1,14E+13**	**1,17E+13**	**4,34E+09**	**7,25E+08**	**1,20E+13**	**1,29E+13**	**4,26E+09**	**5,52E+08**
^{14}C	**4,50E+08**	**2,51E+08**	**1,89E+07**	-	**3,06E+08**	**2,98E+08**	**2,66E+06**	-	5,97E+08	7,35E+08	3,46E+06	-
^{89}Sr	1,15E+06	1,10E+06	7,74E+05	-	1,46E+06	9,96E+05	7,42E+05	-	7,68E+05	5,88E+05	4,66E+05	-
^{90}Sr *	1,34E+06	1,31E+06	8,90E+05	-	1,52E+06	1,05E+06	7,79E+05	-	**1,15E+06**	6,32E+05	**1,03E+06**	-
^{55}Fe	8,47E+06	9,09E+06	**7,04E+07**	3,37E+06	9,53E+06	8,55E+06	**6,98E+07**	3,46E+06	8,62E+06	8,38E+06	4,86E+07	2,97E+06
^{59}Ni	8,47E+06	9,09E+06	**7,82E+06**	3,37E+06	9,53E+06	8,55E+06	**9,52E+06**	3,46E+06	8,62E+06	8,38E+06	9,04E+06	2,97E+06
^{7}Be	3,22E+07	3,45E+07	3,23E+07	1,28E+07	3,62E+07	3,26E+07	3,12E+07	1,32E+07	3,64E+07	3,53E+07	3,00E+07	1,26E+07
^{51}Cr	2,37E+07	**2,52E+07**	2,38E+07	9,45E+06	2,67E+07	2,39E+07	**2,31E+07**	9,69E+06	2,68E+07	2,60E+07	**2,26E+07**	9,30E+06
^{54}Mn	**3,60E+06**	**6,80E+06**	**2,96E+07**	**3,26E+06**	**4,54E+06**	**4,11E+06**	**2,56E+07**	**1,53E+06**	**9,44E+06**	**4,66E+06**	**4,17E+07**	**3,41E+06**
^{58}Co	**3,25E+06**	**6,17E+06**	**1,11E+07**	**1,61E+06**	**3,92E+06**	**3,74E+06**	**8,04E+06**	**1,41E+06**	**9,07E+06**	**3,85E+06**	**2,12E+07**	**1,44E+06**
^{59}Fe	8,45E+06	**9,59E+06**	**9,68E+06**	3,36E+06	9,55E+06	8,54E+06	**8,11E+06**	3,49E+06	**1,04E+07**	**9,16E+06**	**1,46E+07**	3,32E+06

^{60}Co	**1,86E+07**	**9,49E+06**	**8,59E+07**	**2,71E+06**	**7,70E+06**	**8,14E+06**	**5,68E+07**	**1,95E+06**	**1,60E+07**	**7,32E+06**	**1,26E+08**	**4,42E+06**
^{65}Zn	8,45E+06	9,10E+06	8,53E+06	3,36E+06	9,55E+06	8,54E+06	8,16E+06	3,49E+06	9,59E+06	9,33E+06	7,89E+06	3,32E+06
^{95}Nb	**5,05E+06**	**5,43E+06**	**5,16E+06**	2,04E+06	5,77E+06	**4,91E+06**	**5,98E+06**	2,10E+06	**5,37E+06**	5,57E+06	**5,92E+06**	1,98E+06
^{95}Zr	5,11E+06	5,47E+06	5,10E+06	2,04E+06	5,77E+06	5,13E+06	**5,21E+06**	2,10E+06	**5,51E+06**	5,57E+06	**5,03E+06**	1,98E+06
^{99}Mo	1,27E+07	1,37E+07	1,28E+07	5,08E+06	1,43E+07	1,28E+07	1,24E+07	5,20E+06	1,44E+07	1,39E+07	1,18E+07	5,00E+06
^{103}Ru	3,84E+06	4,09E+06	3,81E+06	1,54E+06	4,27E+06	3,79E+06	3,67E+06	1,56E+06	4,30E+06	4,17E+06	3,54E+06	1,52E+06
^{106}Ru *	**2,69E+07**	2,19E+07	2,04E+07	8,08E+06	**2,31E+07**	2,06E+07	1,97E+07	8,30E+06	2,30E+07	2,23E+07	**1,88E+07**	8,02E+06
^{10m}Ag	**4,09E+06**	**3,60E+06**	**1,75E+07**	**1,36E+06**	**2,73E+07**	**3,54E+06**	**1,71E+07**	**2,07E+06**	**1,78E+07**	**3,56E+06**	**2,69E+07**	**1,77E+06**
^{124}Sb	**3,46E+06**	3,64E+06	**3,85E+06**	**1,33E+06**	**8,39E+06**	**4,59E+06**	**3,54E+06**	**1,41E+06**	**1,19E+07**	**3,64E+06**	**7,97E+06**	**1,32E+06**
^{125}Sb	**1,06E+07**	1,09E+07	**1,03E+07**	4,04E+06	**1,22E+07**	1,03E+07	9,85E+06	4,15E+06	**1,30E+07**	1,11E+07	9,46E+06	4,01E+06
^{131}I	6,80E+06	**1,10E+07**	6,82E+06	**2,61E+06**	7,61E+06	**6,73E+06**	6,58E+06	2,76E+06	7,69E+06	7,43E+06	6,31E+06	2,68E+06
^{134}Cs	2,30E+06	**5,30E+06**	**2,45E+06**	**9,10E+05**	**2,48E+06**	**5,72E+06**	**3,35E+06**	**9,30E+05**	**2,85E+06**	**2,74E+06**	**4,04E+06**	**9,10E+05**
^{37}Cs *	**6,50E+06**	**1,66E+07**	**9,10E+06**	**2,48E+06**	**1,66E+07**	**1,98E+07**	**8,58E+06**	**2,46E+06**	**4,87E+07**	**7,36E+06**	**1,24E+07**	**2,98E+06**
^{140}Ba *	1,02E+07	1,07E+07	1,02E+07	4,08E+06	1,15E+07	1,03E+07	9,86E+06	4,20E+06	1,15E+07	1,11E+07	9,42E+06	3,96E+06
^{141}Ce	5,94E+06	6,24E+06	5,95E+06	2,36E+06	6,66E+06	6,04E+06	5,76E+06	2,39E+06	6,71E+06	6,52E+06	5,53E+06	2,34E+06
^{144}Ce *	2,71E+07	2,85E+07	2,73E+07	1,08E+07	**3,07E+07**	2,74E+07	**2,60E+07**	1,11E+07	3,06E+07	2,97E+07	**2,54E+07**	1,06E+07
^{154}Eu	5,11E+06	5,47E+06	5,10E+06	2,04E+06	5,77E+06	5,13E+06	4,93E+06	2,10E+06	5,74E+06	5,57E+06	4,71E+06	1,98E+06
U-group	5,09E+03	5,46E+03	**8,58E+04**	2,02E+03	5,72E+03	5,13E+03	**7,12E+04**	2,08E+03	5,74E+03	5,57E+03	**6,39E+04**	1,99E+03
Pu-group	3,39E+03	3,64E+03	**4,25E+04**	1,35E+03	3,81E+03	3,42E+03	**4,21E+04**	1,38E+03	3,83E+03	3,71E+03	**2,56E+04**	1,33E+03
Am-group	3,39E+03	3,64E+03	**2,07E+04**	1,35E+03	3,81E+03	3,42E+03	**2,38E+04**	1,38E+03	3,83E+03	3,71E+03	**1,45E+04**	1,33E+03
Cm-group	3,39E+03	3,64E+03	**5,55E+03**	1,35E+03	3,81E+03	3,42E+03	**7,35E+03**	1,38E+03	3,83E+03	3,71E+03	**6,45E+03**	1,33E+03

**: together with daughter nuclide(s)*

Gaseous discharges in 2010-2012

	Gaseous discharges in 2010 [Bq]			Gaseous discharges in 2011 [Bq]			Gaseous discharges in 2012 [Bq]		
Isotope	**from Unit 1&2**	**from Unit 3&4**	**from common building Unit1-4**	**from Unit 1&2**	**from Unit 3&4**	**from common building Unit1-4**	**from Unit 1&2**	**from Unit 3&4**	**from common building Unit1-4**
^{41}Ar	**7,56E+12**	**7,56E+12**	**-**	**4,85E+12**	**6,87E+12**	**-**	**6,91E+12**	**7,18E+12**	**-**
^{85}Kr	**3,18E+10**	**1,08E+11**	**-**	**4,79E+10**	**3,90E+10**	**-**	**9,84E+10**	**4,97E+10**	**-**
^{85m}Kr	**1,31E+12**	**3,10E+12**	**-**	**2,09E+12**	**3,08E+12**	**-**	**2,62E+12**	**2,22E+12**	**-**
^{87}Kr	**1,17E+12**	**9,52E+11**	**-**	**1,04E+12**	**9,27E+11**	**-**	**9,56E+11**	**7,51E+11**	**-**
^{88}Kr	**1,63E+12**	**1,54E+12**	**-**	**1,47E+12**	**1,76E+12**	**-**	**1,59E+12**	**1,24E+12**	**-**
^{133}Xe	**2,38E+12**	**6,58E+12**	**-**	**4,73E+12**	**4,72E+12**	**-**	**7,16E+12**	**3,71E+12**	**-**
^{135}Xe	**4,68E+12**	**1,34E+12**	**-**	**2,20E+12**	**3,38E+12**	**-**	**2,29E+12**	**1,43E+12**	**-**
^{3}H (HT)	**1,77E+11**	**2,10E+11**	**-**	**1,59E+11**	**1,46E+11**	**-**	**1,45E+11**	**1,53E+11**	**-**
^{3}H (HTO)	**1,86E+12**	**2,48E+12**	**-**	**1,75E+12**	**1,63E+12**	**-**	**1,58E+12**	**1,57E+12**	**-**
^{14}C (CO_2)	**9,52E+09**	**1,45E+10**	**-**	**6,16E+09**	**8,46E+09**	**-**	**9,44E+09**	**1,36E+10**	**-**
^{14}C (CH_4)	**2,45E+11**	**2,92E+11**	**-**	**1,54E+11**	**1,80E+11**	**-**	**2,19E+11**	**3,09E+11**	**-**
^{89}Sr	4,72E+04	6,19E+04	9,03E+02	5,12E+04	5,99E+04	7,95E+02	2,43E+04	3,82E+04	4,08E+02
^{90}Sr *	6,36E+04	8,52E+04	1,09E+03	5,84E+04	7,37E+04	8,77E+02	**4,72E+04**	4,07E+04	4,46E+02
^{24}Na	3,07E+07	4,50E+07	1,05E+04	2,74E+07	3,96E+07	2,33E+05	2,79E+07	3,32E+07	8,19E+05
^{42}K	2,48E+08	3,62E+08	6,97E+04	2,21E+08	3,18E+08	1,87E+06	2,24E+08	2,68E+08	6,64E+06
^{51}Cr	**4,28E+06**	**6,28E+06**	1,05E+04	**5,86E+06**	5,56E+06	1,45E+04	**6,08E+06**	**4,63E+06**	2,06E+04
^{54}Mn	**1,54E+06**	**4,80E+06**	**9,41E+04**	**6,50E+05**	**2,05E+06**	**4,97E+03**	**2,23E+06**	**1,46E+06**	**2,25E+03**
^{58}Co	**1,25E+06**	**2,08E+06**	**3,17E+03**	**6,30E+05**	**1,06E+06**	**2,24E+03**	**1,91E+06**	**9,80E+05**	**1,89E+03**
^{59}Fe	**2,03E+06**	2,69E+06	**4,32E+03**	**1,60E+06**	2,40E+06	5,87E+03	**1,73E+06**	2,03E+06	6,83E+03
^{60}Co	**1,21E+07**	**8,10E+06**	**1,98E+05**	**5,92E+06**	**2,55E+06**	**3,47E+04**	**3,49E+07**	**3,16E+06**	**8,90E+03**
^{65}Zn	2,08E+06	3,15E+06	5,58E+03	1,89E+06	2,73E+06	6,08E+03	1,89E+06	2,27E+06	4,90E+03
^{75}Se	**1,05E+06**	**1,13E+06**	2,09E+03	**1,17E+06**	**9,80E+05**	2,35E+03	**6,70E+05**	**9,00E+05**	2,09E+03
^{76}As	**3,30E+07**	**1,23E+08**	6,97E+03	**8,31E+07**	**3,70E+07**	9,11E+04	**1,17E+08**	**1,43E+08**	3,12E+05
^{95}Nb	**1,01E+06**	**1,68E+06**	**2,71E+03**	**1,03E+06**	1,53E+06	3,65E+03	**2,53E+06**	**1,15E+06**	4,67E+03
^{95}Zr	**1,03E+06**	**1,61E+06**	**2,74E+03**	1,04E+06	1,49E+06	3,30E+03	**1,62E+06**	1,11E+06	3,40E+03
^{99}Mo	1,61E+06	2,51E+06	2,09E+03	1,60E+06	2,15E+06	1,20E+04	1,57E+06	1,86E+06	3,73E+04

^{103}Ru	**1,01E+06**	**1,13E+06**	2,09E+03	**6,40E+05**	**1,05E+06**	2,67E+03	**1,14E+06**	1,01E+06	3,26E+03
^{106}Ru *	**7,62E+06**	4,00E+06	6,97E+03	**2,56E+06**	**3,34E+06**	7,53E+03	**6,06E+06**	2,94E+06	5,88E+03
^{110m}Ag	**6,33E+06**	**1,57E+06**	**1,09E+04**	**5,81E+06**	**1,19E+06**	**4,57E+03**	**7,90E+06**	**1,33E+06**	**3,31E+03**
^{122}Sb	-	-	-	-	-	-	**9,00E+04**	-	-
^{124}Sb	**7,10E+05**	**1,06E+06**	**1,85E+03**	**5,80E+05**	**1,00E+06**	2,29E+03	**1,97E+06**	**9,00E+05**	**2,30E+03**
^{125}Sb	2,11E+06	3,13E+06	5,75E+03	**2,02E+06**	2,84E+06	6,15E+03	**2,13E+06**	2,34E+06	4,60E+03
^{131}I aerosol	1,04E+06	**3,93E+06**	1,74E+03	7,10E+05	1,08E+06	**6,76E+03**	7,90E+05	**1,07E+06**	1,06E+04
^{131}I	**1,08E+06**	**7,00E+07**	1,74E+03	**1,10E+06**	**8,02E+06**	4,39E+03	**4,45E+06**	**9,79E+06**	1,06E+04
^{131}I organic	1,34E+07	**3,53E+07**	-	1,19E+07	1,41E+07	-	**6,94E+06**	**7,11E+06**	-
^{132}I	**4,06E+06**	**2,14E+07**	-	**2,89E+06**	**3,70E+07**	-	**5,10E+05**	**1,33E+07**	-
^{133}I	**3,50E+05**	**5,73E+06**	-	**7,50E+05**	**1,97E+07**	-	**5,20E+05**	**4,73E+06**	-
^{133}I organic	**2,05E+06**	**1,96E+06**	-	**9,80E+05**	**4,60E+05**	-	**6,50E+05**	**4,05E+06**	-
^{134}Cs	**8,20E+05**	**1,04E+06**	**1,90E+03**	**6,10E+05**	1,03E+06	2,24E+03	**1,03E+06**	**9,30E+05**	**1,45E+03**
^{135}I	-	-	-	-	**6,46E+06**	-	-	-	-
^{137}Cs *	**6,14E+07**	**2,72E+06**	**1,68E+04**	**5,91E+07**	**2,20E+06**	**5,59E+03**	**9,80E+07**	**3,14E+06**	**2,27E+03**
^{140}Ba *	1,72E+06	2,18E+06	3,49E+03	1,16E+06	2,06E+06	6,64E+03	1,20E+06	1,90E+06	1,35E+04
^{141}Ce	1,04E+06	1,62E+06	2,79E+03	1,05E+06	1,53E+06	3,71E+03	1,04E+06	1,15E+06	4,90E+03
^{144}Ce *	5,24E+06	7,64E+06	1,39E+04	**4,62E+06**	6,86E+06	1,51E+04	**7,32E+06**	5,74E+06	1,20E+04
^{154}Eu	8,70E+05	1,09E+06	2,09E+03	5,80E+05	1,03E+06	2,23E+03	5,60E+05	9,50E+05	1,64E+03

**: together with daughter nuclide(s)*

89.	**Country** **Ukraine**	**Article** **Article 14.1**	**Ref. in National Report** **para 14.3 page 40**

Question/ Comment Were SAMG revised to take account the stress tests results? What is the currently accepted scope of SAMG? How is the qualification issue being resolved for the equipment involved in severe accident management?

Answer The revision of the SAMG is continuous. After an analysis or technological change prepared in the stress test SAMG was updated. For example the result of analysis of the minimum number of workers of shifts needed no change in the SAMG. But if a severe accident diesel generator will be put in operation, the handling of this generator should be implemented into the SAMG. The scope of the SAMG is determined on the basis of PSA Level 2. The qualification of the equipment used for SAMG based on the result of an analysis made by Institute ofr Eneregy Research. In this document the pressure, temperature, dose rate and the mechanical resistant

(earthquake resistance) of the equipment used for SAMG were identified.

90.	**Country** **Ukraine**	**Article** **Article 14.1**	**Ref. in National Report** **para 14.3 page 40**
Question/ Comment	It is stated that for all units in 2011, in addition to the already installed hydrogen recombiners, further 60 high power recombiners have been installed in the hermetic compartments for severe accident management purposes. What hydrogen explosion safety criteria were used for implementation of this measure?		
Answer	The capacity, number and the positions of the recombiners were identified on the basis of an analysis prepared by the Hungarian institute VEIKI (Institute for Electric Power Research). Basically, the main goal was to decrease the containment pressure less than 3,35 bar abs (HCLPF) and hydrogen concentration less than 10 % in all hermetic compartments. Hydrogen distribution and burning was calculated by GASFLOW 3D code. To prevent DDT, calculations by 7λ criteria were used. Containment pressure was calculated by conservativ AICC method and also by ASTEC code. Containment failure due to hydrogen burn has been prevented by high capacity PARS and containment integrity has been kept for all dominant sequences.		
91.	**Country** **Ukraine**	**Article** **Article 14.1**	**Ref. in National Report** **para 14.3 page 40**
Question/ Comment	It is stated in the report that “The independent electric power system has been constructed by way of the installation of mobile diesel generators and connection routes from the generators towards the principal safety distributors”. What is the quantity and power of these mobile diesel generators? How the systems intended to ensure availability of the main control room are powered. How and which loads are powered from the mobile diesel generators?		
Answer	For the four units there are four mobile SA diesel generators installed. The capacity of one diesel generator is 100 KW. These diesel generators supply the pressurizer safety valves, which shall be open in case of a severe accident to avoid the high pressure melt ejection. The generators shall also supply the means of reactor external cooling system and the SA instrumentation system. These generators charge the safety batteries through seismically protected electric cables. The batteries can supply the equipment in the actual status of the plant.		
92.	**Country** **Czech Republic**	**Article** **Article 14.2**	**Ref. in National Report** **page 39**

Question/ Comment	In 2011 there was a question: Are you using RI ISI (risk-informed in-service inspection approach) for planning in-service inspection? If yes: - which national or international documents are used for implementing RI ISI? - which components is this approach used for? and your answer was: Yes, we are planning to use risk informed in-service inspection (RI-ISI) approach soon. The development of ISI programs are going on, but the licensing process has not been finished yet. Based on ASME CODE BPVC Section III, design review of primary cycle equipment the former 4 - year inspection program will increase to an 8 - year inspection period. After this modification the ASME CODE BPVC Section XI. will be a basic document for the ISI program. The application of RI-ISI follows only after the introduction of this. Now the Licensee has developed a pilot study that aims at choosing the procedure. The selection of the equipment has not yet been completed, it has yet to be decided which pipelines will be inspected. Is there any new information about this issue?
Answer	The ASME BPVC based ISI program has been introduced gradually and it is still in progress. There is no change concerning RI-ISI status comparing with the status reported in 2011.

93.	**Country** **Finland**	**Article** **Article 14.2**	**Ref. in National Report** **chapter 14.2.1. annex 1**

Question/ Comment	What kind of requirements are there for qualifications of in-service inspections (NDT inspection system and personnel)? In other words, how do you ensure that possible defects growing in the mechanical components during operation can be detected with a high reliability? What inspection frequencies are used in in-service inspections of components at different safety classes? Is a risk-informed in-service approach used in your inspection program?
Answer	The Hungarian Nuclear Safety Code prescribes that ISI performed on systems and system components should be qualified in order to prove that the inspection system – inspection equipment, inspection procedure and the inspection personnel – is able to fulfill the requirements under real circumstances.

	The qualification of ISI systems in Hungary has been started in 2000. The qualifications are performed according to ENIQ (European Network for Inspection Qualification) EUR 22906 EN and IAEA EPB-WWER-11 methodologies. Up to present time 26 qualifications have been completed. The main emphasis has been put on mechanized UT/ET inspections of safety related components. The requirements towards the inspection capability (qualification target flaw size, sizing criteria etc.) are defined based on fracture mechanic analysis performed individually for each qualification. The qualifications are conducted by Type 1 Qualification Body (Independent third party organization). As a result of change of ISI rules to a new ASME BPVC Section XI. based ISI program, the former 4 year inspection period has been increased to a 8 year inspection cycle. This transition period is still in progress. The risk-informed approach not yet used in our inspection program.

94.	**Country** **Finland**	**Article** **Article 14.2**	**Ref. in National Report** **chapter 14.2.2. annex 1**
Question/ Comment	How the regulator controls and gets feedback about ageing management and its results to be able to make conclusions about plant safety?		
Answer	As a part of yearly report Paks NPP is obliged to send in a special report on the performance of its ageing management program, which includes the results of equipment specific ageing management activities. HAEA assess this report and executes regular inspections on the conditions of safety class 1 and 2 equipment based on results of this assessment. During the preparation of the license renewal of the units HAEA performs a rather detailed inspection and assessment of results on the progression of ageing processes on safety class 1 equipment. In cases of any events both the operator and the regulator carefully assess if the event has direct or indirect relationship with any degradation mechanism of related equipment.		

95.	**Country** **India**	**Article** **Article 14.2**	**Ref. in National Report** **Page 39-40**
Question/ Comment	It is mentioned in the report that " it is not justifiable to initiate automatic reactor protection operation for earthquakes". Hence the earthquake alarm and protection systems are currently kept offline. Can Hungary provide the basis for keeping this protection offline. Please also clarify whether safety implication for delayed operator action, if any, are taken into consideration.		
Answer	The false automatic operation of the earthquake protection signal could cause four units scram simultaneously, which in itself is		

dangerous. If all four Paks NPP units would scram at the same time, the most likely consequence would be the site loss of offsite power, and collapse of the national grid. When an earthquake event happens the earthquake monitoring system indicates the event, and depending on the intensity of the earthquake the seismic isolation signal automatically isolates the components that are not qualified for the earthquake. The activation of the scram signal is the responsibility of the operator.

96.	**Country** **Canada**	**Article** **Article 15**	**Ref. in National Report** **Page 62, Section 19.7.1**

Question/ Comment Does the Authority have its own database for licensee event reporting?

Answer Yes. Database contains Licensee's and inspectors' evaluation of events (mandatory and important low level events selected by inspectors) and the status of the fulfillment of corrective actions.

97.	**Country** **Czech Republic**	**Article** **Article 15**	**Ref. in National Report** **Section 15.1**

Question/ Comment Article 15, 15.1 Legal background: "The ministerial Decree 15/2001 … derives the annual release limits …"
15.4.1 Atmospheric and liquid release: "… isotope specific release limits derived from the dose constraints (90 μSv) determined for the plant."

What are the isotope specific release limits?

Answer According to the environmental license of Paks NPP:

For atmospheric release

Isotope	**Release limit [Bq]/year**		**Isotope**	**Release limit [Bq]/year**		**Isotope**	**Release limit [Bq]/year**	
	1,20 m	**20 m**		**1,20 m**	**20 m**		**20 m**	
^{41}Ar.	4,60x10^{16}	6x10^{15}	^{54}Mn	l,80x10^{13}	2,20x10^{12}	^{110m}Ag	4,80x10^{12}	5,80x10^{11}
^{85}Kr	1,20x10^{19}	l,3x10^{18}	^{58}Co	2,10x10^{13}	2,60x10^{12}	^{I24}Sb	8,90x10^{12}	l,10x10^{12}

^{85m}Kr	4,10x10^{17}	4,9x10^{16}	^{59}Fe	l,10x10^{13}	l,40x10^{12}	^{l25}Sb	1,40x10^{13}	l,70x10^{12}
^{87}Kr	7,30x10^{16}	1,0x10^{16}	^{60}Co	2,40x10^{12}	2,90x10^{11}	^{131}I aer.	3,70x10^{12}	4,50x10^{11}
^{88}Kr	2,90x10^{16}	3,5x10^{15}	^{65}Zn	2,30x10^{12}	2,80x10^{11}	^{13I}I elemi	7,80x10^{11}	2,00x10^{11}
^{133}Xe	2,00x10^{18}	2,2x10^{15}	^{75}Se	2,90x 10^{12}	3,60x10^{11}	^{13I}I szerves	9,50x10^{13}	l,0x10^{13}
^{l35}Xe	2,40x10^{17}	2,8x10^{16}	^{76}As	1,10x10^{15}	1,40x10^{14}	^{134}Cs	8,20x10^{11}	1,0x10^{11}
^{3}H(HT)	2,20x10^{17}	2,3x10^{16}	^{89}Sr	4,30x10^{12}	5,3x10^{11}	^{137}Cs*	l,00x10^{12}	1,30x10^{11}
^{3}H(HTO)	1,70x10^{17}	l,9x10^{16}	^{90}Sr*	3,70x10^{11}	4,5x10^{10}	^{140}Ba*	2,90xl0^{13}	3,50xl0^{12}
^{14}C (CO_2)	1,30x10^{14}	l,4x10^{13}	^{95}Nb	4,90x10^{13}	6,00x10^{12}	^{141}Ce	4,60x10^{13}	5,60x10^{12}
^{14}C (CH_4)	l,50x10^{21}	1,7x10^{20}	^{95}Zr	2,30x10^{13}	2,80x10^{12}	^{144}Ce*	3,50x10^{12}	4,30xl0^{11}
^{24}Na	l,50x10^{15}	l,90x10^{14}	^{96}Mo	l,90x10^{15}	2,30x10^{14}	^{154}Eu	5,1x10^{12}	6,2x10^{11}
^{42}K	l,70x10^{16}	2,10xl0^{15}	^{103}Ru	8,70x10^{12}	l,10x10^{12}			
^{51}Cr	8,80x10^{14}	1,10x10^{14}	^{l06}Ru*	2,30x10^{11}	2,80x10^{10}			

For liquid release

Isotope	Release limit [Bq]/year	Isotope	Release limit [Bq]/year	Isotope	Release limit [Bq]/year
^{3}H	2,90x10^{16}	^{65}Zn	1,40x10^{12}	^{124}Sb	9,50xl0^{12}
^{7}Be	3,00x10^{14}	^{89}Sr	l,20x10^{13}	^{125}Sb	1,1x10^{13}
^{14}C	3,10x10^{12}	^{90}Sr*	2,20x10^{12}	^{13I}I	2,70x10^{12}
^{51}Cr	2,70x10^{14}	^{95}Nb	2,10x10^{12}	^{134}Cs	6,50x10^{11}
^{54}Mn	1,00x10^{13}	^{95}Zr	8,50x10^{12}	^{137}Cs*	9,00x10^{11}
^{55}Fe	4,30x10^{13}	^{99}Mo	l,30x10^{14}	^{l40}Ba*	5,50xl0^{13}
^{58}Co	3,20x10^{12}	^{103}Ru	9,00x10^{11}	^{141}Ce	2,10x10^{13}

^{59}Fe	2,30x10^{12}	^{106}Ru*	l,10x10^{12}	^{144}Ce*	l,00x10^{13}
^{59}Ni	4,00x10^{14}	^{110m}Ag	2,00x10^{13}	^{154}Eu	l,8x10^{12}
^{60}Co	9,50x10^{11}				

98.	**Country** **Czech Republic**	**Article** **Article 15**	**Ref. in National Report** **Section 15.5**

Question/ Comment

Article 15, 15.5 Radiation protection control of the nuclear power plant and the environmental monitoring system:
"… Type-A environmental monitoring stations (air aerosol and iodine activity, gamma dose rate) and a Type-G environmental monitoring stations set up at about 1.5 km from the power plant."

What kind of measurements do the Type-G stations perform?
Are both the Type-A and Type-G stations set up at about 1.5 km distance from the power plant? How many stations are there?

Answer

Type-G stations perform gamma dose rate measurement. Yes, both the Type-A and Type-G stations set up at about 1.5 km distance from the power plant. There are 9 pcs of Type-A and 11 pcs of Type-G stations.

99.	**Country** **Germany**	**Article** **Article 15**	**Ref. in National Report** **Page 44, Figure 15.3.1-2**

Question/ Comment

In Figure 15.3.1-2 the annual collective doses according to regulatory film dosimeter readings are presented. Despite a visible increase of the annual collective dose in 2011, which is obviously connected to enhanced doses of the maintenance personnel in Unit 1 of Paks NPP (see table 15.3.2-1, page 45), there seems to be a slight increasing tendency for the last years.
Please comment on this and provide some reasons for the enhancement of exposure of the maintenance personnel in Unit 1 of Paks NPP in 2011. Does this increase rely only on the modifications made with respect to the cooling circuits within the spent fuel pool as stated on page 41 (Article 14)?

Answer

Paks NPP carries out a long outage with total refuelling (it means it is two times longer than a „normal" outage") in every four years for each Unit. During these long outages there is a higher volume of inspection and maintenance work activities in the radiation area. Additionally to this fact during the outages in the mentioned years the Paks NPP carried out extensive modernization with the installation of systems for severe accident management initiated by the Life Time Extension process being in progress. This work

involved a lot of construction work in a very high radiation area that resulted in very high accumulated doses during these outages.

Another aspect, the reason of the increasing of the collective dose was the longer maintenance time because the unplanned maintenance works. The collective dose was 1254.5 person*mSv based on the dosimetrical licences and 589.4 person*mSv got into the planned maintenance works.

There were some reason of the margin between the planned and the concrete collective doses:

- The construction of the PRISE took up much longer time;
- The installing of the hydrogen recombiner was new activity in Paks NPP, so wasn't previous information for the work and it belong to the unplanned works;
- New activity in Paks NPP, the reactor cavity flooding, which took up longer time;
- Unplanned architectural works;
- Maintenance works of main circulation pump;
- Some material test of the planned works.

100.	**Country** **India**	**Article** **Article 15**	**Ref. in National Report** **Page 41 subsection 15.1**

Question/ Comment It is mentioned in the report that regulation of radiation protection belongs to minister responsible for health. Is minister responsible for health is part of ministry of human resources? Further it is mentioned that the technical issues of plant radiation protection is task of HAEA. Is HAEA the enforcement agency in Hungary? How the coordination between the various ministries (ministry of Human resource, HAEA and ministry of rural development) established ?

Answer

1. The Ministry of Human Resources is led by the Minister of Human Resources and the Ministry has Ministers of State who lead the various specialist departments. The Minister of State for Health exercises control on behalf of the Minister of Human Resources, so the regulation, licensing and inspection of radiation protection belongs to Minister of Human Resources.
2. HAEA is the enforcement agency in the field of nuclear safety for the nuclear facilities and will be in the near future for the radioactive waste facilities. In this scope of responsibility it oversees the technical issues of radiation and radiation protection directly related to the nuclear safety. In the field of radiation protection of employees and the public, the Office of the Chief Medical Officer of the National Public Health and Medical Officer Service is the enforcement agency. The Office operates territorially competent government offices in the capital and in the counties, named as "Radiation Health Decentres".
3. There are governmental decree level regulations about the co-authority relationship in the field of licensing between HAEA

and the Chief Medical Officer's organizations. On the basis of bilateral agreement there may be occasional but common inspection activities of HAEA and the Chief Medical Officer's organizations. Bilateral meetings and regulatory forums used to be organized periodically or in that cases, when common regulatory position should be achieved in complex questions.

101.	**Country** **Norway**	**Article** **Article 15**	**Ref. in National Report** **Article 15**

Question/ Comment	Could Hungary provide some more information on the dose planning at Paks NPP? Is the EPDs used for this? Or is it based on the film dosimeters?
Answer	Usually, the radiation workers involved in works accompanied planned irradiation, wear three dosimeters. The 1st one is provided and evaluated by the National Personal Dosimetry Service (NPDS), which organization is responsible to provide personal dosimeters for all radiation worker type "A" in Hungary in 2-month monitoring periods. (It should be noted that „Panasonic UD802AT" TL-dosimeters were introduced instead of film-dosimeters in March 2013, because of the production and trade of film-dosimeters „Kodak Personal Monitoring Film Type II" used formerly had been cancelled by that time.) The 2nd dosimeter is also a TLD, and the 3rd one, which is an EPD (e.g. „Siemens EPD Mk2.3" or „MGP DMC 2000 S"), are provided by the own dosimetry device of the NPP. These EPDs are managed centrally, ie. their alarm levels are set by the NPP's dosimetry service also, according to the dose plan made prior to the particular operation. Every worker entering the controlled area has to use an EPD, when anybody leaves the controlled area, has to disconnect with EPD, and then the operative doses immediately is read out from the EPD and the results are connected to the carrying person. During the dose planning, the NPP takes into consideration both – the potential (expected) radiation burden during the intended operation just to be executed and – the radiation burden of workers received during the former operations. In order for all workers to be allowed to have less effective dose than 6 mSv for a single task, and less annual effective dose than the dose constraint for the workers (20 mSv/year). The on site dose rate measurements and the earlier measured dose (EPD) are basically used for the dose planning at Paks NPP. Finally, at the end of the 2-month long monitoring periods, the NPP compares the dose values read out from the TLDs provided by NPDS and the dose values read out from own EPDs. The 2nd TLDs (the on site) are read out only if there was an incident or a suspicion of an extraordinary irradiation situation which might cause an elevated radiation burden than planned.

102.	**Country** **Pakistan**	**Article** **Article 15**	**Ref. in National Report** **Section 15.5, Page 45**

Question/ Comment Hungary may provide the environmental monitoring results for the reporting period.

Answer

Release and environment monitoring is carried out in two fundamental ways operated by the Paks NPP:

- the on-line system has a telemetric system the units of which are situated at stacks (iodine and noble gas activity, aerosol and airflow measurement), at water sampling stations (total gamma activity, temperature, water flow measurement), at the meteorological tower, and at environmental monitoring stations set up at about 1.5 km from the power plant (air iodine activity, dose rate). Data are transmitted to the above mentioned Dosimetry Control Room;
- off-line laboratory measurements serve to enhance the accuracy of data given by the remote measuring system. The remote data are complemented with sensitive laboratory measurements of a large quantity of samples taken from emissions and from the environment. The stations perform off-line measurements of fall-out, dry-out, grass, soil, aerosol, ^{14}C, atmospheric tritium activities and doses.

In addition, sampling stations which measure dry-out activities and doses are situated within a 30 km radius of the nuclear power plant. Moreover, numerous samples are collected in the environment surrounding the power plant, e.g. mud, fish, plants, milk and soil. Measurements have so far shown only insignificant amounts of radioisotope activity generated by the nuclear power plant in the environment; the additional dose of the population from releases is below the nSv/year range.

At the Spent Fuel Interim Storage Facility radiation protection monitoring was also commenced on both the site and the surroundings of the facility. Experience so far shows radiation levels to be very low, and the additional exposure of the population caused by releases is below the nSv/year range.

Some results (measured data in annual average; A1-A9: monitoring station; B24: control monitoring station):

Air sampling, C-14 (CO_2) [mBq/m^3]:										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010	43,1		43,9	46,8		43,6		43,6	43,7	42,6
2011	43,1		42,9	46,7	43,7	43,4	44	42,9	43	42,4
2012	43	42	43,4	46,7	43,4	43,2	43,4	43	43,6	42,3

Air sampling, C-14 (CO_2 + CnHm)										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**

2010	43,1		43,9	46,8		43,6		43,6	43,7	42,6
2011	43,1		42,9	46,7	43,7	43,4	44	42,9	43	42,4
2012	43	42	43,4	46,7	43,4	43,2	43,4	43	43,6	42,3

Air sampling, H-3 (HT, CnHTm) [mBq/m^3]										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010	29,9		53,2	44,9		31,6		29,1	25,8	23,7
2011	7		9,5	9,5	7,2	7,2	7,9	7,4	7,3	6,6
2012	7,6		9,2	9,3	7,4	8	7,5	8,02	8,5	7,3

Air sampling, I-131 [µBq/m^3] *It is resulted from Fukushima accident*										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010										
2011	143,9	166,7	148,2	155,5	163	163,9	123,9	150,9	139,3	170,4
2012										

Grass samples, Sr-90 activity concentration [Bq/kg, dry]										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010	2,1	2	1,8	2,1	2,1	2,5	2	1,6	1,6	1,7
2011	1,9	2	1,9	2,2	2,2	2,5	1,8	1,6	1,6	1,8
2012	1,9	1,8	1,8	1,8	2	2,3	1,7	1,5	1,5	1,8

Soil samples, Sr-90 activity concentration [Bq/kg, dry]										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010	0,5	0,6	0,8	0,5	0,6	0,7	0,7	0,7	0,4	0,7

2011	0,5	0,6	0,7	0,5	0,6	0,7	0,7	0,7	0,5	0,6
2012	0,5	0,5	0,7	0,5	0,6	0,7	0,6	0,7	0,5	0,6

Soil samples, Cs-137 activity concentration [Bq/kg, dry]										
Sampling time/place	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**B24**
2010	15,2	6,4	2,6	6,9	8	4,9	7,9	6	3,7	3,2
2011	12,3	3,7	4,9	6,4	5,8	12,2	2,3	2,5	3,9	5,7
2012	13,6	8,3	5	5,7	5,8	14,2	2,9	2,8	3,6	7,5

Monitoring of releases and the environment is constantly carried out by the competent authorities as well, independently of the monitoring system operated by the Paks NPP:

The Joint Environmental Radiation Monitoring System (JERMS; in Hungarian: HAKSER) was established in 1981, based on a decision of Hungarian Atomic Energy Commission, to perform a regular and independent radiological monitoring of the environment located around the Nuclear Power Plant Paks. Recently, the operation of JERMS is regulated by the Governmental Decree No. 275/2002 (XII.21.). Laboratories of organizations involved in the activities of JERMS collect different environmental samples from a circular region having 30 km radius of the NPP. The results of the radiological analyses of the samples collected are sent to the Data Processing and Analyzing Centre of JERMS, for the processing of the data and determination of the radiation burden of the population living around the NPP. The institutions taking part in the JERMS prepares and publishes the results of the environmental monitoring of the vicinity of NPP via annual reports.
These reports are public and since 1999, they can be downloaded from the URL:
http://www.hakser.hu/eredmenyek/eredmenyek_en.html

Generally speaking, the same monitoring results were obtained by the NPP and the Authorities.

103.	**Country** **Ukraine**	**Article** **Article 15**	**Ref. in National Report** **para 15.5 page 47**

Question/ Comment Do you take into account the impact from tritium and C-14 releases when assessing the public irradiation doses?

Answer Yes, both radionuclides are taken into consideration. These results are also included into annual reports of Joint Environmental

Radiation Monitoring System (JERMS; in Hungarian: HAKSER), The institutions taking part in the JERMS prepares and publishes the results of the environmental monitoring of the vicinity of NPP via annual reports. These reports are public and since 1999, they can be downloaded from the URL:
http://www.hakser.hu/eredmenyek/eredmenyek_en.html.

104.	**Country** **United States of America**	**Article** **Article 15**	**Ref. in National Report** **15.3.2**

Question/ Comment

Table 15.3.2-1 “Exposure of maintenance personnel between 2010 and 2012” shows cumulative exposures for 3 years of operation at all 4 Paks sites. For units III and IV, annual doses seem to be relatively stable, or decreasing, from 2010 to 2012. However two anomalies were reported, but not fully explained.

(1) Please explain why accumulated dose at Unit I went from 297 in 2010 to 1255 in 2011, and explain why accumulated dose at Unit II jumped to 969 in 2012, from 437 in 2011. Increases in cumulative dose are anticipated for outage activities; however dose values of 1255 at Unit 1 and 969 at Unit II are very high (especially compared to Units III and IV). Note all doses are in uSv.

(2) Please clarify if table 15.3.2-1 includes all plant personnel involved in plant operations and plant outages (e.g. Operations personnel, security personnel, health physics personnel) or just maintenance personnel.

Answer

1) Paks NPP carries out a long outage with total refuelling (it means it is two times longer than a „normal” outage”) in every four years for each Unit. During these long outages there is a higher volume of inspection and maintenance work activities in the radiation area. Additionaly to this fact during the outages in the mentioned years the Paks NPP carried out extensive modernization with the installation of systems for severe accident management initiated by the Life Time Extension process being in progress. This work involved a lot of construction work in a very high radiation area that resulted in very high accumulated doses during these outages.
2) The table includes all plant and outside personnel (maintenance, health physics, material tester, carpenter, insulator, operations workers etc.), who are involved in plant outages.

105.	**Country** **Austria**	**Article** **Article 16.1**	**Ref. in National Report** **16.1.4, p50**

Question/ Comment

The 6th CNS Report identifies the distances for the Precautionary Action Zone, the Urgent Protective Action Zone, and the Zone of Restriction of Foodstuff Consumption as 3 km, 30 km, and 300 km respectively. Were these distances established considering an

accident at only one unit or considering concurrent accidents at multiple units?

Answer — The sizes of the different protective action zones were defined for the entire Paks NPP (for all 4 units) with the consideration of TABLE A5-II. in the IAEA publication on Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency (EPR-Method 2003).

106.	**Country** **Canada**	**Article** **Article 16.1**	**Ref. in National Report** **Page 52, Section 16.2.1**

Question/ Comment — How does the independent Authority convey emergency information and provide situational awareness to the public in the case of a nuclear accident?

Answer — The national level information of the public can only be conducted in coordinated form through media announcements and the web pages of the involved authorities. The national, regional, branch and institutional Public Information Working Groups are responsible for the dissemination of the information and providing situational awareness to the public on their field of interest. The main principles, content, and means of public information are regulated by a governmental decree. In the 30 km vicinity of the NPP the main means of communication is the Public Information and Alert Network siren system, which is capable of transmitting speech as well as siren signals (for more detailed information see: page 52. section 16.2.1.).

107.	**Country** **Czech Republic**	**Article** **Article 16.1**	**Ref. in National Report** **pages 49-50**

Question/ Comment — Does data from the computer simulation have an influence on the evaluation of the nuclear safety and radiation conditions?

Answer — Yes, data from the computer simulation have an influence on the evaluation of the nuclear safety and radiation conditions, especially in the very early phase of an emergency before, during and shortly after the release of radioactive materials to the environment, when no detailed measurement information is available. During this period the computer simulations with the consideration of actual plant conditions are the sole way to predict the radiation conditions and derive possible early protective measures. In later phase the importance of computer simulation decreases, nevertheless they are still good for making 12, 24 and 36 hour predictions with the consideration of real and actual nuclear and environmental radiation condition. These results help in optimization of decisions on longer term protective actions.

108.	Country Czech Republic	Article Article 16.1	Ref. in National Report Action Plan 3.1.13/page 25
Question/ Comment	Is the Backup Command Centre intended for on-site and/or off-site?		
Answer	Off-site, 5 kilometers far from Paks NPP.		

109.	Country Germany	Article Article 16.1	Ref. in National Report Page 50, Section 16.1.4
Question/ Comment	In the case of an emergency, the actions determined upon the declaration of the emergency class shall be introduced or shall prepare for their introduction in zones designated by concentric circles around the installation. Among the planning zones, the smallest in radius (3 km) is the "precautionary action zone", in which the measures shall be prepared for in advance and implemented without undue delay in emergency. Please comment on the different measures for the different planning zones? Is iodine prophylaxis foreseen and if yes, up to which radius.		
Answer	The main difference between the three planning zones is in the level of preparedness and the urgency of the action. In the 3 km zone of the NPP there is only one settlement with approximately 200 people. In case of an emergency with considerable amount of emission the necessary countermeasures are carried out without any delay. The population of the settlement is evacuated without analysing the possible doses suffered by the people in order to prevent delay in the necessary actions. In this zone the iodine tablets - together with information pamphlets - are distributed to the local population, so if there is an emission of radioactive iodine without enough time to evacuate, people can self-administer the iodine while being sheltered. In the 3-30 km zone the countermeasures are carried out after the situation has been evaluated and analysed. In this zone the tablets are stored at family doctors, mayor's offices and at the duty services of first response organizations. The National Public Health Services of the County Government Offices distribute the tablets after receiving the orders. If early countermeasures are necessary based on measurements and the analysis of the situation they are also introduced outside the 30 km zone. If iodine prophylaxis shall be introduced in the 30-300 km zone the tablets are stored in national storage or if necessary they can be reallocated from parts of the 30 km zone where iodine prophylaxis is not needed. Outside the 300 km zone no early countermeasures are foreseen, but in case of an NPP event the situation is analysed and measurements are carried out and if the situation deems necessary the appropriate countermeasures are taken.		

110.	Country Slovakia	Article Article 16.1	Ref. in National Report p. 49

Question/ Comment During the 5th Review Meeting the preparation of a national exercise was announced. The present report does not contain information on this. Could Hungary provide information on the status and results of the national exercise?

Answer Hungary follows the recommendation of the IAEA on establishment a regular training and exercise regime at national level. The Training and Exercise Subcommittee of the Nuclear Emergency Response Technical-Scientific Committee elaborates proposal on training activities and exercises for the upcoming year covering central, sectoral and regional levels of the Hungarian Nuclear Emergency Response System (HNERS) including nuclear facilities as well. After the last comprehensive national exercise in 2004 a similar high level exercise was foreseen for 2009 that was postponed due to the emerging economical crisis for 2010. Later, mainly due to the major reorganization of the public administration system after the elections in 2010 and the modernization of legislative basis of disaster management, decision was made to hold the national exercise in 2013. The preparation of the national exercise went on smoothly and all necessary conditions were established by June 2013, when a severe flood event occurred on the river Danube. Within this time period all foreseen major participants (disaster management, police, defense, environmental, agricultural and health authorities) of the national nuclear emergency exercise were actively involved in the response to the flood event therefore, unfortunately, this exercise had to be postponed again. Finally during 7-9 October 2013 the national nuclear emergency exercise was successfully conducted. During the first 2 days an extended command post exercise was held and on the last day a demonstration exercise was conducted in the City of Paks. International experts were invited from Hungary’s neighboring countries and the IAEA and EC to observe the exercise.

111.	Country Slovakia	Article Article 16.1	Ref. in National Report p. 51

Question/ Comment Is this plan reviewed by the competent authority on the regularly base? Is the review based on a legal requirement?

Answer Yes, the Comprehensive Emergency Management Plan of Paks Nuclear Power Plant is reviewed by the competent authority on a regular base with a frequency of 2 years or less (if major changes occur in the legislative environment, in the technical layout, in the internal procedures or in scientific-technical background). This review is based on the authorization provided in Paragraph 17, Section 2, Point 8 of the Act on Atomic Energy No. CXVI of 1996 and in Paragraph 17, Section 2 of the Governmental Decree No. 118/2011. (VII. 11.). The competent authority is the Hungarian Atomic Energy Authority. Following the prescription of Paragraph 5

of the Governmental Decree No. 112/2011. (VII. 4.) The Directorate General of National Disaster Management is involved in the regular review as special authority.

112.	Country Spain	Article Article 16.1	Ref. in National Report Pg. 50

Question/ Comment	The Fukushima accident has obliged to take protective measures further than the 30 km radios zone around the plant, in addition to food consumptions restrictions. Have the Hungarian emergency planning included any flexibility to be prepared to act outside the Urgent Protection Action Zone if necessary?
Answer	The Hungarian emergency response is flexible and can be adapted to the individual situation emerging from an event in the NPP. The level of preparedness for a significant emergency resulting in contamination outside the premises of the facility varies with distance from the power plant. All types of early countermeasures can be introduced outside the 30 km zone, but within the 30 km zone the preparations are more rigorous with pre-existing plans for evacuation, hosting places for the evacuees outside the planning zone and iodine tablets stored in every settlement.

113.	Country Spain	Article Article 16.1	Ref. in National Report Pg. 51

Question/ Comment	How are the licensee responsibilities in relation to the off-site emergency planning regulated? Has the licensee any obligation in the off-site emergency plan besides providing to the authorities accurate information and communicating the situation to the public? Does the Comprehensive Emergency Management Plan include the provisions for the licensee to discharge its responsibilities in the off-site emergency planning?
Answer	According to Paragraph 10 Section (1) of the Act No. CXVI/1996 on Atomic energy the licensee is primarily responsible for the safe application of atomic energy and meeting the safety requirements. Paragraph 42 Section (1) states that in case of an abnormal event the licensee is obliged to implement immediate and effective actions if the level of ionizing radiation or radioactive contamination of workers or the public and/or the amount of released radioactive materials to the environment exceed statutory limits. Paragraph 43 Section (2) Points a)-c) further describe the responsibilities of licensees in preparing emergency response plan, establishing the technical, personal and administrative conditions for emergency response and preparations for receiving external support from competent authorities. Paragraph 44 of the same act states that implementation of actions to respond to an abnormal event, but exceeding the capabilities of licensee is the responsibility of the off-site authorities. Paragraph 14, Sections a)÷k) of the

	Governmental Decree No. 167/2010. (V. 11.) describe in details the licensees responsibilities in relation to the off-site emergency planning. These requirements covers identification of emergencies, notification and activation of off-site authorities, provision of technical information for off-site authorities, providing warnings and information to the public, receiving external technical and logistical support from off-site authorities and establishing a common exercise regime with off-site authorities. The legal and regulatory environment clearly defines the scope of responsibilities of licensees in case of an emergency. These responsibilities remain within the borders of the site of a facility except of providing information to and communicating with the off-site authorities and the public. These responsibilities do not change during the process of responding to the emergency situation. The Comprehensive Emergency Management Plan does not include the provisions for the licensee to discharge its responsibilities in the off-site emergency planning.		
114.	**Country** **Spain**	**Article** **Article 16.1**	**Ref. in National Report** **51**
Question/ Comment	Does the regulation establish emergency dose limits for workers during an emergency? Is there any regulatory guidance in relation to this subject?		
Answer	The regulation Decree No. 16/2000 (VI.8.) EüM Minister of Health establishes the emergency dose limits for workers. There are three categories: 1) Dose to those workers involved in emergency response generally, should not exceed the annual occupational effective dose limit (50 mSv), 2) Dose to those workers contributed directly to avoid either significant increase of doses to population or a severe deterioration of the technical situation, should not exceed 100 mSv effective dose. 3) Dose to those workers involved in direct lifeguarding or lifesaving, should not exceed 250 mSv effective dose. There are several guidances issued by Hungarian Atomic Energy Authority about the proper interpretation and recommended practice, related to the National Nuclear Emergency Response Plan. Many of these guidances re-cite these limits and their legal origin and give brief explanations, when and how these limits should be applied. Although, there is no such a specific guidance, which deals with these emergency dose limits and those conditions (requirements), which ones should be fulfilled to minimize the risk of the exceeding these limits.		
115.	**Country** **Spain**	**Article** **Article 16.1**	**Ref. in National Report** **Pg. 51**

Question/ Comment	The simultaneous occurrence of an accident in several units is one of the scenarios that cannot be disregards after Fukushima. Does the current Comprehensive Emergency Management Plan consider those situations and have enough human resources to manage them? Does it consider severe external events and degraded conditions in the access and areas surrounding the plant?
Answer	Yes. Current Comprehensive Emergency Management Plan of Paks NPP (ÁVIT) does consider those (multi unit) situations and have enough human resources to manage them. Severe accident management program has been finished by 2015 entirely. (See Page 59.: The Severe Accident Management Guidelines containing the new accident management strategy have been introduced in Unit 1 and 2; while the modifications necessary for the prevention, management of accidents and for consequence mitigation have also been implemented. A portion of the necessary modifications in Unit 3 and 4 have also been completed yet, while introduction of accident management and implementation of full scope of the modifications is planned for 2013 and 2014.) Yes. Current Comprehensive Emergency Management Plan of Paks NPP does consider such events –defining tasks/obligations for cooperation with national and local disaster management organizations and for supplementation to access the site.

116.	**Country** **Spain**	**Article** **Article 16.1**	**Ref. in National Report** **51**

Question/ Comment	The structure and organization of the national disaster management and nuclear emergency preparedness has been updated during the recent years. According to the report, on-site and off-site exercises are regularly performed. The question is related to the scope and content of these exercises. Has been carried out recently a general full-scale off-site emergency exercise, involving all the organizations that have assigned some responsibilities and including protective measures such as evacuation and reception of part of the population surrounding the Paks NPP?
Answer	Hungary follows the recommendation of the IAEA on establishment a regular training and exercise regime at national level. The Training and Exercise Subcommittee of the Nuclear Emergency Response Technical-Scientific Committee elaborates proposal on training activities and exercises for the upcoming year covering central, sectoral and regional levels of the Hungarian Nuclear Emergency Response System (HNERS) including nuclear facilities as well. After the last large scale national exercise in 2004 a similar high level exercise was foreseen for 2013. During 7-9 October 2013 the national nuclear emergency exercise was successfully conducted. During the first 2 days an extended command post exercise was held and on the last day a demonstration exercise was conducted in the City of Paks. International experts were invited from Hungary’s neighboring countries and the IAEA and EC to observe the exercise.

Beyond the large scale comprehensive exercises lower scale exercises have been organized on an annual basis with the involvement of the Hungarian nuclear facilities and major response organizations. Hungary takes part in the IAEA ConvEx and EC ECURIE exercise regime as well.

117.	**Country** **Spain**	**Article** **Article 16.1**	**Ref. in National Report** **52**

Question/ Comment Does the licensee have available a plan for crisis communication, according to the best practices recognized internationally?

Answer

Yes. *Plant Emergency Communication Plan (LTT)* is the part of Current Comprehensive Emergency Management Plan of Paks NPP. General Crisis Communication Plan exists on corporate level of Hungarian Power Companies Ltd. (MVM Zrt.) documents. In case of unintended events Public and Media Communication Group of Emergency Response Organization of Paks NPP (BESZ Tájékoztatási Szervezet) is responsible for related tasks.

118.	**Country** **United States of America**	**Article** **Article 16.1**	**Ref. in National Report** **16.1.4**

Question/ Comment This section states that "Classification enhances the uniform international and domestic understanding of severity and response to the impact of the emergency".

(1) Please explain how the Hungarian emergency classification system enhances uniform understanding.
(2) Please clarify if the classification levels (e.g. Site Area Emergency, General Emergency) are based on IAEA safety standard classification schemes?
(3) Are the emergency action levels similar to those used in other European countries?

Answer

Questions (1) and (2) The response to an emergency should begin without delay and be fully coordinated from the start. To facilitate this, a common emergency classification system should be adopted by all national response organizations. The Hungarian emergency classification system has been originated from the IAEA classification system that is described in details in Section 2.1.5 of the IAEA publication EPR-Method 2003. During the application of the IAEA based classification system in Hungary it was realized that the system did not provide clear basis for classification of events caused by radioactive sources. The IAEA definition (see Section 2.1.5. of EPR-Method 2003 "*Other emergencies such as uncontrolled source emergencies*

involving loss, theft or loss of control of dangerous sources, including terrorist threats involving radioactive material and re-entry of a satellite containing such a source.") did not provide basis for classifying such events by their severity or by the affected area. Therefore new definitions were derived from the original IAEA version and accepted for further use in the Hungarian Nuclear Emergency Response Plan that enhanced the uniform understanding of emergency classes not only for nuclear facility emergencies, but also for emergencies caused by radioactive sources. For comparison and better understanding the following table introduces both the IAEA and Hungarian definitions elaborated for different emergency classes. It can be concluded that the IAEA definitions provide the basis for the Hungarian terms and the Hungarian version includes only slight modifications with the aim to generalize and/or extend the scope of the IAEA definitions.

Original definition of emergency classes (Section 2.1.5. of EPR-Method 2003)	**The Hungarian version of emergency classes (Section 2.3. of the Hungarian Nuclear Emergency Response Plan version 2.2 of 2013)**
General emergencies at facilities in threat category I or II involving an actual or substantial risk of, release of radioactive material or radiation exposure that warrants taking urgent protective actions off the site. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences and to protect people on the site and within the precautionary action zone and urgent protective action planning zone, as appropriate.	**General emergency** is a non-routine situation or event involving an actual or substantial risk of, release of radioactive material or radiation exposure that warrants taking urgent protective actions in large areas. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences and to protect people nearby and within the precautionary action zone and urgent protective action planning zone, as appropriate.
Site area emergencies at facilities in threat category I or II involving a major decrease in the level of protection for those on the site and near the facility. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences, to protect people on the site and to make preparations to take protective actions off the site if this becomes necessary.	**Local emergency** is a non-routine situation or event involving a major decrease in the level of protection for the public or for people nearby. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences, to protect people nearby and to make preparations to take protective actions if this becomes necessary.
Facility emergencies at facilities in threat category I, II or III involving a major decrease in the level of protection for people on the site. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences and to protect people on the site. Emergencies	**Facility emergency** at facilities in threat category I, II or III involving a major decrease in the level of protection for people on the site. Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences and to protect people on the site. Emergencies in this class can never give rise to

in this class can never give rise to an off-site threat.	an off-site threat.
Alerts at facilities in threat category I, II or III involving an uncertain or significant decrease in the level of protection for the public or for people on the site. Upon declaration of this class of emergency, action shall be promptly taken to assess and mitigate the consequences of the event and to increase the readiness of the on-site and off-site response organizations as appropriate. Alerts include events that could evolve into facility, site area or general emergencies.	**Alert** is a non-routine situation or event involving an uncertain or significant decrease in the level of protection for the public or for people nearby. Upon declaration of this class of emergency, action shall be promptly taken to assess and mitigate the consequences of the event and to increase the readiness of the on-site and off-site response organizations as appropriate. Alerts include events that could evolve into facility, local or general emergencies.

Q(3) Yes, the emergency action levels in Hungary are similar to those used in other European countries. These include technical parameters, measurements results and instrument readings at nuclear facilities and/or specific indicators or measurements results and monitoring data provided by the national radiation monitoring system.

119.	**Country** **United States of America**	**Article** **Article 16.1**	**Ref. in National Report** **16.2.1**

Question/ Comment

This section describes the system of public information in a nuclear emergency.

(1) Please clarify the role of social media, such as Facebook and Twitter, in the nuclear emergency information system

(2) Does Hungary use a Joint Information Center (JIC) to brief the public? (for example, a place where the local governments, the state and federal governments, the nuclear power plant licensee and other radiation experts work together to jointly brief the media and the public)

(3) What information if any is sent to residents around the Paks facility to prepare them for an emergency in advance? For example, sending out a calendar or a brochure to every resident within the plume exposure EPZ annually that describes emergency measures, evacuation routes, what to do if you hear a siren, location of reception centers, what to bring with you, etc.

Answer

1) The social media is not part of the official public information system in case of an emergency, because it is impossible to organise, standardise or regulate. On the other hand the use of social media greatly enhances communication therefore the National Directorate

General for Disaster Management started its own Facebook page in May 2013. Visitors of the page receive insights into the everyday activity of the organization: the news, photos and useful information of the National Directorate General and the County Directorates for Disaster Management are constantly being shared. The goal of disaster management - in addition to providing general information – is to facilitate information sharing through this social media visited by millions of people in situations when the population needs the help of this organization and it is crucial to start the response as soon as possible. The number of people liking the page is constantly growing.
The Disaster Management also developed a free application for smart phones and tablet PC-s accessible for anyone. The application called VÉSZ – the Hungarian acronym for Disaster Information Service – started 25th November 2013. It is an effective tool for providing timely and up-to-date information for the population about the potential hazards near their homes, on their routes and at their destinations. They also get warning information through the system.

2) In case of an emergency in Hungary an Inter-ministerial Disaster Management Coordination Committee is assembled comprising the representatives of every affected ministry and institution. This committee has a Public Information Working Group that has access to all the information coming into the Inter-ministerial Disaster Management Coordination Committee and every decision made. Therefore the Public Information Working Group has information from all the affected parties and can be considered as a Joint Information Centre.

3) There are several information handouts sent to residents around the Paks facility to prepare them for an emergency in advance. Every year the residents receive a calendar containing a description of the siren system, the meaning of the signals, the description of the planning zones, especially the zone of early countermeasures. There is also information on what to do if you hear the siren, if different countermeasures are in order (iodine prophylaxis, sheltering, evacuation – and what to bring with you), what the role of police force is in nuclear emergency management and what kind of countermeasures you have to apply in order to prevent fire. The calendar also has more general information, e.g. what to do if you detect fire and the most important telephone numbers and radio frequencies.
There are also brochures in paper form handed out to the residents and digitally available on the web page of the County Directorate for Disaster Management.
In addition to this the teachers and students in the area receive education (it is regulated in a ministerial decree) on disaster management.
The nuclear power plant also considers education of the population a priority. The NPP operate a visitor's center at its facility and a museum on atomic energy at Paks, the largest city nearby.

120.	**Country** **Canada**	**Article** **Article 16.2**	**Ref. in National Report** **Page 52, Section 16.2.1**

Question/ Comment	Will the independent Authority adopt communications methods utilizing social media (Facebook, Twitter etc) to inform the public of events related to nuclear safety and emergencies?
Answer	Since the national report has been issued the National Directorate General for Disaster Management started its own Facebook page in May 2013. The Disaster Management also developed a free application for smart phones and tablets PC-s accessible for anyone. The application called VÉSZ – the Hungarian acronym for Disaster Information Service – started 25th November 2013. The authorities use social media in order to distribute information however it is not part of the official public information network. (For more detailed information seethe answer to question number 119.)

121.	**Country** **France**	**Article** **Article 16.2**	**Ref. in National Report** **16.2.2, p53-54**

Question/ Comment	Do you think that the basis of exchanges between Hungary and Slovak Republic is a good technical basis for international exchanges of data?
Answer	Hungary has bilateral international radiological monitoring data exchange with Austria, Croatia, Slovenia and the Slovak Republic and also a multilateral radiological monitoring data exchange with every EURDEP member state through the EURDEP system – that provide data every hour in case of an emergency. The data exchange with the Slovak Republic is a good example for the cooperation with neighbouring countries that was specifically mentioned because it is being enhanced due to the extension of the Mochovce NPP 40 km from the Hungarian border.

122.	**Country** **Slovakia**	**Article** **Article 17.1**	**Ref. in National Report** **p. 55**

Question/ Comment	Could Hungary give details about the factor used for siting evaluation in particular regarding societal and demographic factors/profiles? Are there any arrangements in place to control the development of populations around NPP? How is the radiological impact in the public and local environment considered?"
Answer	*Q1: Licensing of an NPP site is a two stage process. First a site evaluation programme shall be submitted and approved, then, based on the implementation of the programme, a site license shall be obtained. The requirement for the societal and demographic evaluation is included in the requirements (Nuclear Safety Code, Volume 7, Siting). The particular requirements tell:*

7.2.4.0200. Considering the distribution of population, the properties of the site and the nuclear installation shall together ensure that:

a) the radiation exposure to the population is as low as reasonably achievable and always complies with the relevant regulations; and

b) the radiological risk to the population arising from accident conditions, including those requiring the introduction of emergency measures, complies with the relevant regulations.

7.3.6.1100. The distribution of the population, and the demographical characteristics, including the existing and predicted data and the temporary and permanent inhabitants in the adjacent areas, shall be identified to support the assessment of the effects of radioactive discharges and the emergency impacts and to allow the development of the accident prevention procedures and the assessment of the feasibility thereof. In the framework of the assessment work, highlighted priority shall be given to the densely populated areas in the direct environment of the site, and social institutions, and public centres in the region. Purposive surveys shall be undertaken if the available data are insufficient.

This requirement relates both for the existing (e.g. to be used during periodic safety review) and new nuclear facilities.

Q2: No, there are no such measures.

Q3: *The radiological impact is determined on the basis of the average individual dose value and the population distribution. The radiological impact from the gaseous and liquid emissions of the NPP is below the regulatory dose limit by several orders.*

123.	**Country** **Spain**	**Article** **Article 17.1**	**Ref. in National Report** **Pg. 55**

Question/ Comment Could you provide a summary of the status of implementation of the measures derived from the Targeted Safety Reassessment carried out as a consequence of the Fukushima accident, related to protection against external events?

Answer The related actions identification numbers cames from resolution HA5589. The list of actions are available at http://www.ensreg.eu/EU-Stress-Tests/Country-Specific-Reports/EU-Member-States/Hungary. There are 13 measures which are directly connected to the protection against external events. These are:
1.2: The feasibility study is ready. A new earthquake-protected firestation will be built. The design requirements for the building is ready, the contract procedure for the design and implementation plan is ongoing. The deadline is still kept.
1.3: The survey of the equipments is ready. There are only several equipments where is a need for modification. The task will be

closed in 2014 before the deadline.
1.4: The penetrations were done in 2013. The task is ready and closed by HAEA 29 month earlier than the prescribed deadline.
1.6: The feasibility study and implementation plan are ready. The contract procedure for the construction is ongoing. The keeping of the deadline will be a big challenge.
1.9: The feasibility study, the design requirements for the building are ready. The design planning is ongoing. The deadline is still kept.
1.10: The feasibility study is ready. The implementation planning is ongoing. We evaluated the need of automatic shut down for the condenser pumps and decided not to do this.
1.11: The method for the assessment is ready. The boring was done at the end of 2013. The assessment is ongoing. The deadline is still kept.
1.12: The feasibility study is ready. The design requirements are fixed. The evaluation for loads 10^{-5}/y frequency (external hazards) was done last year. The deadline is still kept.
1.16: The concept plan is ready and the design planning is ongoing. The task will be ready 1-2 years earlier than the prescribed deadline.
1.27: The re-qualification of the protected command centre is ready. Only several modifications are needed to protect the building from safety earthquake. The approval by the HAEA is ongoing.
1.28: The design requirements are fixed. The evaluation with the geotechnical investigations for loads 10^{-5}/y frequency (external hazards) were done last year. The contract procedure for planning is ongoing.
1.41: The evaluation is ready and under review by the regulatory body.
1.42: The concept plan for the units is ready, no need for huge technical modifications in the plant tp meet the requirements.

124.	**Country** **Canada**	**Article** **Article 18.1**	**Ref. in National Report** **Page 62, Section 19.7.1**

Question/ Comment Does the Authority conduct its own investigations into events at the plant?

Answer Yes. HAEA reviews all investigation report of reportable events and HAEA performs independent investigations on significant events.

125.	**Country** **Germany**	**Article** **Article 18.1**	**Ref. in National Report** **page 57, Unit 1 LTO**

Question/ "…The required safety improvement actions and the actions designed for severe accident management have been accomplished in

Comment	Unit 1, so the unit may operate for a further 20 years…" Several of the actions from NAcP (Part IV: Summary Tables of Action) are long lasting by nature of modification and correspondingly their schedule of implementation is up to 2018. What are the licensing conditions for the period before finishing the safety improvements and how was this problem solved for licensing of unit 2?
Answer	Petőfi Gábor Basically the stress test results have not influenced the service life extension license of unit 1. The results and the concluding safety improvement measures – like all other safety related problems, general ageing issues or operating experience – were and are managed under the current operating license of the plant. Concerning the service life extension of unit 2, the license application was received in november 2013. The HAEA has one year to assess the application. The approach to be used is the same: the introduction of SAMGs and completion of the related modifications are pre-conditions for licensing of service life extension, but the stress test related modifications are managed under the normal processes. 2018 is the date of the next PSR, therefore this is the last date to implement the stress test results.

126.	**Country** **Finland**	**Article** **Article 19.1**	**Ref. in National Report** **chapter 19.5.1. annex 4**

Question/ Comment	What are the criteria to allow some components to operate until failure? Is there some kind of component classification for the maintenance requirements (e.g. components not allowed to fail versus those that are allowed to fail)?
Answer	Technical Specifications is a main document what includes operating conditions and limits. The maintenance requirements is consistent with regulations of Technical Specifications. The components are safety classified according to their safety functions. This safety class is the basis of the maintenance programme.

127.	**Country** **Norway**	**Article** **Article 19.1**	**Ref. in National Report** **19.1**

Question/ Comment	Could Hungary elaborate on the transition from "confinement" to "containment" under chapter 19.1 in the report?
Answer	This is a terminology issue; the translated text is not coherent. Of course, in fact, there is no change in the building structures designated to prevent dispersion of radioactive substances in the case of accidents involving a damage of the primary coolant system.

This system most often is called in Hungarian as ”hermetic zone”, but sometimes as containment. In translation we use some variations of it including containment and confinement; in this case there is a lack of consistency. There is no intention in the report to compare it with any kind of e.g. full pressure containments.

128.	**Country** **Pakistan**	**Article** **Article 19.1**	**Ref. in National Report** **Section 19.1, Page 58**
Question/ Comment	It is mentioned that in the framework of the analysis, the load bearing capacity of the containment was determined for internal pressures occurring during severe accidents and significantly exceeding the design pressure. Hungary may like to share the outcome of the analysis and corresponding measures being considered.		
Answer	The pressure retaining capacity of the hermetic part of the main building complex was calculated. The final result of this calculation established the fragility curve of the building. This fragility curve was taken into account when the Level 2 PSA was conducted. These calculations were done by commercial base and therefore only the final results are publicly available.		
129.	**Country** **Spain**	**Article** **Article 19.1**	**Ref. in National Report** **61**
Question/ Comment	Could you provide some details about the “Investment optimization using value analysis methodology” program that is being carried out in the Paks NPP, according to the report?		
Answer	Value Engineering project was introduced in 2006 by external experts. These projects assisted the plant employees learn how to use the methodology. In 2008, a permanent organization was created as the Value Analysis Group and it started to work with the lead of the Technical Director. In the first 4 years the Group and the value analyst teams have worked in the preparation of 32 projects. They detected the possibility of cost reduction in the revised costs of the planning tasks what is 31%. To achieve the necessary quality they proposed 6% additional technical content, along with this extra spending. Summarizing savings and extra spending it can be stated that the value analysis work’s impact on all these projects is that the owner could use more effectively 37% of the costs. As a result of analytical work on specific projects, nearly one-third of pre-scheduled resources have been reallocated. And what is not quantifiable: teams reach all of these results and almost in all projects they were able to achieve a significant		

increase in quality! The work of the Value Analysis Group is based on medium-term and annual plans. Mainly, the subjects of value analysis are high-value strategic projects.

130.	**Country** **Spain**	**Article** **Article 19.1**	**Ref. in National Report** **61**

Question/ Comment	Is the NUBIKI Nuclear Research Institute providing services to HAEA in addition to Paks NPP? If this is the case, how can the independence of the regulatory body be assured?
Answer	In all cases when HAEA is contracting with a TSO it is examined whether the TSO partner is working for the licensee in the given task. If necessary HAEA requests the TSO and the licensee to provide an official statement that in the particular case they are not in a contractual connection.

131.	**Country** **Spain**	**Article** **Article 19.1**	**Ref. in National Report** **Pg. 62-63**

Question/ Comment	What activities are currently carried out by HAEA in relation to the application of operating experience and the analysis of the operational events in Paks NPP? Is there any periodic specific inspection on these subjects? Ad hoc reactive inspection when an event can have safety implications?
Answer	HAEA continuously supervises Licensee’s activities related to use of internal and operational experiences. There are comprehensive inspections to evaluate relevant processes in every 3-5 years. There several targeted inspection to review the effectiveness of corrective action and independent events investigation performed by HAEA on significant events (1-3/year)

132.	**Country** **Spain**	**Article** **Article 19.1**	**Ref. in National Report** **Pg. 67**

Question/ Comment	Could you provide a brief summary of the status of implementation of the measures derived from the Targeted Safety Reassessment carried out as a consequence of the Fukushima accident?
Answer	The post-Fukushima National Action Plan of Hungary has been issued on December 12, 2012. It discusses the safety improvement

actions resulted from the stress-test of Paks NPP and other action decided by the Hungarian authorities. The Hungarian National Action Plan is available in English on the ENSREG's home page (see the links bellow). The last part of the Action Plan presents and summarizes the actions in a table format together with the deadlines for their implementation. The progress of the implementation of the licensees' action plan is supervised by the authority in the frame of comprehensive and targeted inspections. In order to facilitate the tracking process of the implementation of the action plan, the authority obliged the licensee to prepare periodic progress reports. The latest progress reports proved that the progress in the implementation of the actions is still in agreement of the schedule documented in the National Action Plan.
http://www.ensreg.org/EU-Stress-Tests/Country-Specific-Reports/EU-Member-States/Hungary

http://www.oah.hu/web/v2/portal.nsf/att_files/Sajto2012/$File/NAcPv4_Eng_final_small.pdf?OpenElement

133.	**Country** **Ukraine**	**Article** **Article 19.1**	**Ref. in National Report** **page 67**

Question/ Comment

It is stated in Section 20 that "The safety improvement actions decided upon the Targeted Safety Reassessment make the management of severe accidents affecting more units (or spent fuel pools) at the same time possible. The most important actions are as follows: c) construction of alternate cooling of the spent fuel pools".
What alternative cooling features will be introduced?

Answer

All spent fuel pools will have a new pipeline which are able to lead the cooling media to the pool from the courtyard. All external water sources (fishing lakes, Danube, tanker, etc.) - after adding boron – could be used for cooling the spent fuel pool through this new pipeline (in the very low probability situation when all other cooling lines fail)

134.	**Country** **Czech Republic**	**Article** **Article 19.2**	**Ref. in National Report** **Section 19.2.1/Page 59**

Question/ Comment

What is the procedure for making changes L&C (Limits and Conditions)?
Must be any change supported by an independent assessments?
Include L&C (Limits and Conditions) any condition for the minimum number of workers of shifts?
Does exist the so called part of L&C (Limits and Conditions) - "Rationale L&C" in which is the every condition analyzed and explained?
Is this part of L&C ("Rationale L&C") approved by the regulatory authority?

Answer	According to Hungarian Atomic Law any modification of the L&C is a licensing procedure authorized by Hungarian Authority. Any modification shall be revised by an independent expert. The determination of minimum number of workers of shifts is part of the L&C. This number is based on the usability of EOP and SAMG for case of a total loss of power in the plant. Every modification in the L&C shall be supported by an analysis. These analyses are integrated into the Final Safety Report of the NPP. In the licensing process of the L&C modification the analyses are part of the submitted documentation. In this way the "rationale L&C" is approved by the authority.

135.	**Country** **Austria**	**Article** **Article 19.6**	**Ref. in National Report** **19.7.3, p64-65**

Question/ Comment	It is stated: "During the review, the WANO professional team, with the support of the professionals designated for each area from the plant's staff, altogether 9 internationally remarkable good practice and 18 areas to be improved were identified". Could you share with us what are the most relevant good practices examples and recommendation in the field of nuclear safety?
Answer	The most relevant good practices identified by WANO professional team are as follows: 1. Paks NPP uses SOL (Safety through Organizational Learning) method for in-depth analysis of selected events which have important lessons learned in the area of human performance. The discussion and argumentation on the elements and contributors of events is the learning process for the participants. The work is led by a moderator who is a psychologist and has good knowledge about the plant affairs. The result of the SOL analysis is lessons learned from events that are shared to all station staff including contractors. 2. The Operations Division Shift Day has been organized as part of the central refreshment training program for shift personnel. The Shift Supervisor and/or operation managers evaluate the work of the shift, provide the personnel with feedback on the annually performed self-assessment, outline the current issues, and future expectations. There is an opportunity to discuss the suggestions and remarks which have arisen from the personnel. 3. Special radiation detector lamps are used at Paks NPP. They are sensitive to gamma radiation: 20 μGy/h – 1500 Gy/h and energy range: 0.05-1.5 MeV. Such practice allows avoiding unexpected exposure of radiography personnel in case of source sticking into ampoule passage. 4. A complex decontamination system with independent power source is available for mobile decontamination. It provides the treatment of contaminated persons in protective clothes or the surface of the body of contaminated individuals both injured and capable of walking. The decontamination stations can be quickly put into operation after arrival on the scene. It allows to decontaminate 300 persons per hour (100 persons/ per line).

Areas identified for improvement by the WANO team are as follows:

5. The nuclear power plant doesn't pay due attention to reporting, addressing, registering, monitoring and removing the subtle deficiencies.
6. Some operating and maintenance standards and procedures lack sufficient detail and are not quality assured. The prevention of introduction of foreign material into process systems can be improved as well.
7. The depth of root cause analysis of investigations related mainly to low-level, non-reportable events and the trend analysis of deviations revealed by investigations are to be improved.

The storage and protection of flammable materials during hot work aren't always adequate. The establishment of fire barriers sometimes shows deficiencies. Non-compliance with work, fire and radiation protection rules is experienced on occasion.

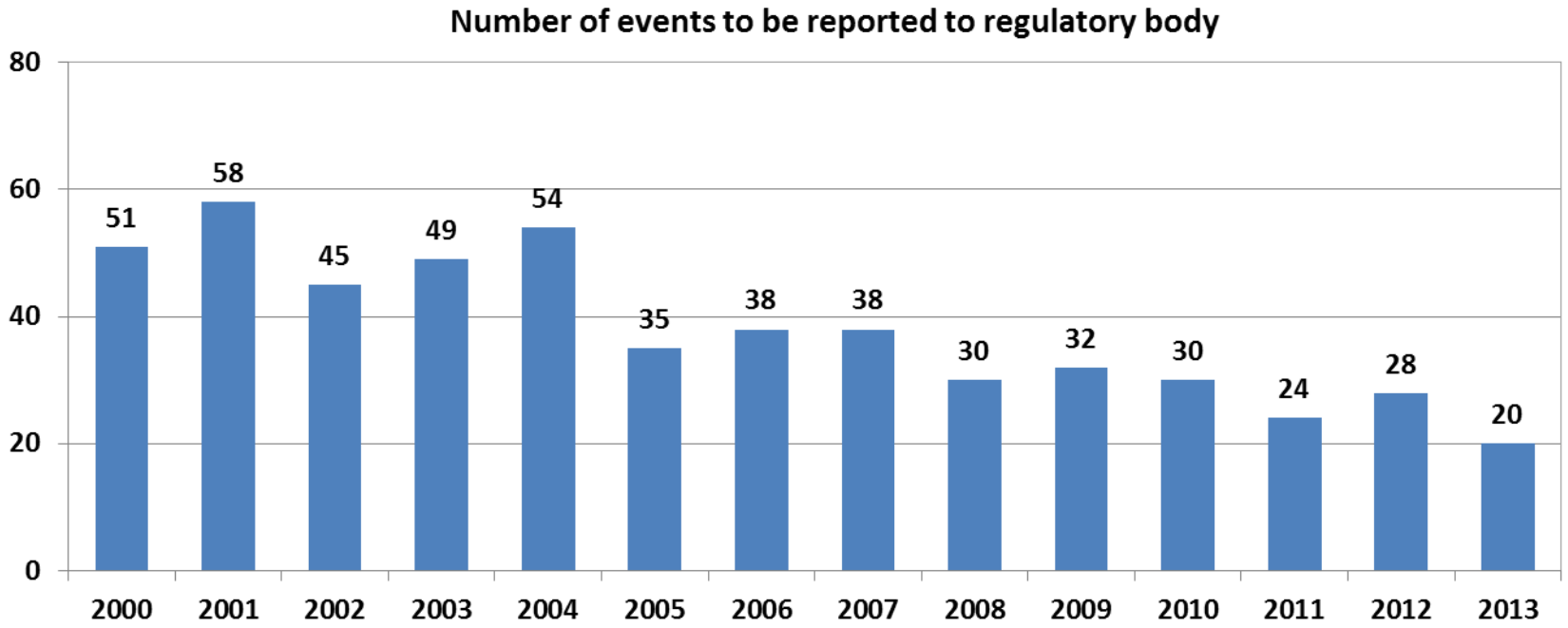
136.	**Country** **Russian Federation**	**Article** **Article 19.7**	**Ref. in National Report** **Section 19.7**

Question/ Comment

The Report presents information on the process of operating experience feedback.
Do the Operator and Regulator use any criteria/ indicators to evaluate the effectiveness of this activity (operating experience feedback)?

Answer

The primary target of collecting, evaulating and feedback of operating experience is reduction of probability of occurence safety-related events in future. Paks NPP Operator uses the key indicator of own Safety Performance Indicators System, the number of events to be reported to regulatory body to evaulate the effectivness of operating experience feedback. The next figure shows the last 14-years trend of this indicator:



Paks NPP's Safety Performance Indicators System includes other indicators connected to assessment of operating experience feedback process,

e.g. number of repetitive events, number of significant events investigated internally (not reported to regulatory body), ratio of delayed corrective actions of invetigations to be reported.

For more details about the Paks NPP Safety Performance Indicators System see the following document on the Paks NPP website:
http://paksnuclearpowerplant.com/download/3863/Safety%20evaluation%20of%20the%20Paks%20Nuclear%20Power%20Plant%202009.pdf