Joint ConventionQuestions Posted To Hungary in 2006

Seq. No 1	Article General	Ref. in National Report K. 2
Question/ Comment	In this Section the safety upgrading of the Puspöksilagy radioactive waste treatment and disposal facility is described. What kind of radiation protection criteria will be adopted, will they be based on practice or intervention approach?	
Answer	The situation can be called a *mixed practice-intervention* situation. This reflects the reality that the site requires intervention, after which it may be appropriate for continued use as a justified practice. Risks associated with waste disposal involve *potential future* risks. The action taken at the Püspökszilágy facility in general has to be considered as an intervention. However, the intention is to continue the operation, which bears elements of a practice. Therefore, the criteria applied in the assessment are based on the Hungarian regulations for practices. Apart from dose limits for public and occupational exposure limits during the operation of the facility (including the remedial activities), the following long term requirements have to be satisfied according to Hungarian regulations: • At the determination of the initiating events in the risk analysis, the events and event-combinations featured by less than 10^{-7} event/year probability could be ignored. • The radiation exposure of the individuals of the control group of the population due to the effects of the disposed waste shall not exceed the effective dose of 100 μSv/year. External – human or natural originating – events or event-combinations affecting the disposal system during its lifetime, which are beyond the design basis, shall be evaluated with the application of the risk criteria. As a result of this, the resultant risk of the events entailing overexposure of any individual of the population shall not exceed the value of 10^{-5} event/year.	

Seq. No 2	Article General	Ref. in National Report
Question/ Comment	Section It is noted that the Paks NPP is gradually increasing the burn-up level of the fuel. What plant modifications have or are being carried out to allow for higher burn-up?	D.1.1
Answer	In the last years NPP Paks initiated several projects aiming at the introduction of new fuel types and resulting in more economic fuel cycles. Increased average enrichment, modification of the lattice pitch and fuel diameter, profiled enrichment, application of burnable absorber, modification of the absorber assembly coupler part can lead to higher burnup and maximum allowed reactor power, to lower fluence for the pressure vessel, and to safer subcriticality conditions of the transport and storage devices. The application of a new fuel type requires the renewal of the relevant chapters of the Safety Analysis Report, which is necessary not only due to the new fuel itself but also because of the modified nuclear properties, reloading schemes, power histories, thermal-mechanical conditions. The brief history of fuel modernization can be summarized as follows: a) At the beginning: NPP Paks used the standard 3.6% (and 2.4%, 1.6%) enriched Russian fuel without profiling.	

b) First modifications: Increased initial inner gas pressure, chamfered pellet edge resulting in more advantageous thermal-mechanical conditions, zircaloy spacer, assembly wall thickness.

c) Licensing of BNFL type fuel: Profiled normal assemblies (3.9%, 3.05%, follower assemblies without profiling); Burnable poison in three central fuel pins; Decreased fuel pin outer diameter, increased subchannel flow area and reactivity; Missing central hole, larger uranium content; Zircaloy-4 cladding.

d) Licensing and operation with the TVEL profiled fuel: The differences in comparison to b) are: Slightly increased average enrichment of the normal assemblies (3.6% → 3.82%); Enrichment profiling of the normal assemblies (4.0%, 3.6%, 3.3%); Follower assemblies of 3.6% enrichment (without profiling).

e) Licensing of "intermediate" TVEL fuel type: The differences in comparison to d) are: Increased lattice pitch in order to decrease the fuel enthalpy rise (12.2 mm → 12.3 mm); Application of Hf absorber plate in the coupler part of the follower assembly). The licensing process has been started, the majority of the safety analyses has been performed. The performed analyses proved that an 8% increase of the original 1375 MW thermal power could be achieved by using this fuel. Further (not planned) power increase with this fuel type would be impossible because of the safety limits of the negative moderator reactivity coefficient at BOC and the subcriticality during the refueling. Similarly to the case of fuel type detailed in point d), the economic benefit of the power uprate is reduced due to the lower discharge burnup which leads to a 4% increase of the fuel consuming. Therefore, a more serious modification would be advantageous in the future. (See point f)).

f) Future TVEL fuel type: Increased average enrichment; Application of burnable poison in a few fuel pins; Profiling.

Seq. No 3		Article General	Ref. in National Report
Question/ Comment	It is noted that there are currently 30 damaged fuel assemblies in the refuelling pond at Unit 2 and that in early 2006, these damaged fuel assemblies will be loaded into cans, then placed in the spent fuel pond and stored there until a decision is reached on their final disposal. More information on the procedure adopted to ensure that this operation is executed safely is requested. Also what options for final disposal of the spent fuel are being considered?		
Answer	The canisters containing the debris of the damaged fuel assemblies will reside in the spent fuel pool for about 5 years in wet condition. They are equipped with open head parts with special contamination preventing device (spiral + goose-neck). The condition of the canisters and the spent fuel pool will be monitored regularly. After 5 years of cooling time, these canisters will be dried. Currently the technology is not yet fully elaborated. As to the further fate of damaged spent fuel assemblies, three alternatives are being considered: a) long term storage in the Interim Spent Fuel Storage Facility, b) transportation to Russia for reprocessing (in Mayak), c) transportation to other countries for reprocessing.		

Continuous special regulatory oversight is required before the final storage of the canisters will be solved.

Seq. No 4	Article General	Ref. in National Report
Question/ Comment	Section D.2.3 It is noted that Hungary is a significant exporter of radioactive sources. Could Hungary provide information on the type and number of such sources. Also how many such sources have been repatriated into Hungary?	
Answer	Concerning their activity, the main components of the exported sources in 2003-2004 were sealed Co-60 sources (about 9 PBq on 24 certificates in 2003 and 19 PBq on 78 certificates in 2004) and sealed Ir-192 sources (about 0.4 PBq on 211 certificates in 2003 and 0.4 PBq on 175 certificates in 2004).	

Seq. No 5	Article General	Ref. in National Report
Question/ Comment	Section H Safety of Radioactive Waste Management It is noted that the Solymar site has been deemed inadequate for long-term disposal and that, following removal and remediation, the authority then cleared the site for "limited utilisation". Which regulatory authority was involved, i.e. was it the HAEA and/or the National Public Health and Medical Officer Service, and what is meant by "limited utilisation" in this context?	
Answer	Relying on the expert advice and technical assistance of the National Research Institute for Radiobiology and Radiohygiene the Pest County Institute of National Public Health and Medical Officer Service was the competent authority that time. During the remediation process at the disposal site in Solymár the radioactive contamination was eliminated by removal of 10-15 cm of the top soil layer. The upper part of the well-cylinders was removed, too, then filled up and covered with a soil layer of 50 cm. Finally, the whole area got covered with a new layer of humus soil. Now the site is cleared as it has been declared by the authority. However, the border of the site has been marked and the use of the area is restricted only to those activities which avoid any deep (deeper than 1 m) building construction. Furthermore, a monitoring well has been kept in operation in order to sample groundwater twice a year.	

Seq. No 6	Article General	Ref. in National Report P. 7(A)
Question/ Comment	The report states that a new, potential site was identified in granite host rock for a below-surface repository that could accommodate the LLW/ILW waste of Parks Nuclear Power Plant. What is the current status of it? How long will it take for each regulatory step before the repository operation?	
Answer	In 2004, the Hungarian Geological Service, in its resolution, approved the summary report of the surface based investigations and stated that the potential site meets all requirement thus – from geological point of view – is suitable for disposing of the L/ILW repository. Further investigations were requested to	

characterize the granite block and designate the exact location of the repository.
On July 10, 2005 referendum was held in the candidate village (Bátaapáti) for a L/ILW repository. The question the citizens had to vote on was whether they were willing to accept hosting the repository. 75% of the eligible citizens cast their ballots. About 91% were supportive and less than 10% were against the repository project. The local administartions of neighbouring villages (representing 11 364 inhabitants) also expressed their support in realizing the investment.
On 21 November 2005 the Hungarian Parliament approved, with 339 yes, 4 no and 8 abstention votes a resolution on the preliminary approval in principle to initiate activities of preparing for the establishment of a radioactive waste repository for low and intermediate level radioactive waste.
Currently and in the years coming, two exploration tunnels (inclined shafts) of 21 m^2 cross sectional area each are being excavated to a length of about 1700 m. Here underground geological exploration is being carried out. Up to March 2006 the excavation has progressed some 500 m in length for both of the inclined shafts. Based on the plans excavation of the access tunnels will be completed in mid 2007.
The first step in the complex licensing procedure is to obtain the Environmental License. This is a two-stage process. At first, a Preliminary Environmental Study has to be prepared. In the second phase the Detailed Environmental Impact Study should be drawn up on the basis of the Preliminary Environmental Study. After this study has been submitted, the Environmental Authority shall hold a public hearing before granting the licence.
Before construction of the repository further licences are required including water management, physical protection (guarding), mining, construction and commissioning licence. In late 2005 Preliminary Environmental Study has been submitted to, and January 2006 approved by the competent Authority.
Based on the current plan the repository can start operationing by the end of 2008.

Seq. No 7	Article General	Ref. in National Report H3, page 68

Question/ Comment: What regulatory documents served as the basis for the described procedures for siting of radwaste disposal? What factor played a decisive role in this site selection, as described in detail in Section H3?

Answer: Ministerial Decree 62/1997. (XI. 26.) on geological and mining requirements for siting and designing nuclear and radioactive waste disposal facilities specifies the basic requirements for siting.
The exploration was planned in three phases. Site selection was the first of them, the suitability assessment of the site the second, and the integrated evaluation of the site and its surroundings the third. This could be followed by the licensing process. These three phases corresponded to the three phases of common international practice (site selection, site characterisation, site confirmation), the objective of the second being the declaration of the suitability of the site.
Based on the findings of the first two stages the Bátaapáti (Üveghuta) site was regarded as geologically suitable for the disposal of radioactive waste.
In the exploration of 2002–2003, the geological, tectonic, geodynamic and hydrogeological pattern of the site was studied in detail. This was sufficient for stating its suitability and for elaborating the concept for its further exploration and its repository concept.
The surface-based exploration was finished in 2003 by means of an integrated

interpretation of all the data, results and information produced up until that time. The resulting data were incorporated into the safety assessment.

Seq. No 8	Article Article 4	Ref. in National Report

Question/ Comment: In the design specification for Interim Spent Fuel Storage Facility it is stated that hermetic (intact) assembles will be placed in ISFSI. Considering possibility of placing damaged fuels into ISFSI are changes in Final Safety Case for ISFSI take place?

Answer: According to the Nuclear Safety Regulations in Hungary the Final Safety Analysis Report of the ISFS Facility has to be updated annually and the necessary changes will be introduced at this occasion, if the decision will be taken to place the damaged fuel assemblies into the ISFS Facility.

Seq. No 9	Article Article 5	Ref. in National Report p. 21

Question/ Comment: Would you provide information on the type of the container that is going to be used for transfer of the thirty damaged fuel assemblies from the refuelling pond of unit two to the spent fuel storage facility. How is the control of the condition of loaded assemblies going to be made? Is it possible to retrieve the damaged assemblies from the container when a decision on their final disposal is reached?

Answer: The canisters containing the damaged fuel assemblies will reside in the spent fuel pool for about 5 years in wet condition. They are equipped with open head parts with special contamination preventing device (spiral + goose-neck). The condition of the canisters and the spent fuel pool will be monitored regularly by activity measurements.

After 5 years of cooling, these canisters will be dried. Currently the technology is not yet fully elaborated. Retrieving the damaged fuel assemblies from these canisters is not possible.

It is not decided yet, how and where the canisters will be transported from the NPP.

Seq. No 10	Article Article 7	Ref. in National Report

Question/ Comment: How is it ensured that the technologies used in the design and construction of the interim spent fuel storage facility are proven or qualified?

Answer: The safety related information required for licensing of the Interim Spent Fuel Storage Facility (construction, putting into operation, operation and termination) was presented in the Final Safety Analysis Report. Based on the operational experiences and the safety enhancing measures, the Final Safety Analysis Report is subject to revision in every year.

The operational limits of the Interim Spent Fuel Storage Facility (ISFSF) were approved by the licensing authority. The reports prepared in relation to the operation and the safety of the Interim Spent Fuel Storage Facility shall be submitted quarterly and annually to the authority. The Environmental Licence of the Interim Spent Fuel Storage Facility was issued by the Environmental Authority. The Environmental Licence specifies the limit values for the airborne and liquid discharges from the Interim Spent Fuel Storage Facility. The results of the discharge and environment monitoring activities shall be reported to the authority on a monthly basis.

During the operational lifetime of each nuclear facility, thus also in the case of the spent fuel management facilities (e.g. ISFSF) comprehensive periodic safety reviews (PSR) have to be accomplished. One of the several aims of this review is to compare the governing documents of the facility (including the legal requirements contained in acts, decrees, etc.) by the advanced international practice, what is understood as a legally more solid definition of the validated and practicable „State of the art and science" terminus. This phase of the PSR is concluding with the report on review to be submitted to the nuclear safety authority. Compulsory part of this submission is to state the revealed deficiencies and make a proposal on the plan of corrective actions. The nuclear safety authority, the Nuclear Safety Directorate of the Hungarian Atomic Energy Authority (HAEA NSD), assesses this report, may make additional review of documents, or even that of the physical situation at the site, and on the basis of the report and its own assessment takes a decision on the possibility of further operation in general and prescribes the required corrective actions with their deadline. Differences between the operational practice and/or domestic requirements and the advanced international experience can serve as basis of requiring enhancements/corrective actions by the regulator, would not those be proposed by the licensee.

In 2004 examinations on handling the ageing were accomplished. Tests performed in the presence of the safety authority were evaluated and finished in 2005 followed by the elaboration the new maintenance procedures of the facility. In the future we are going to switch over from the scheduled preventive maintenance to that based on ageing-treatment approach.

Seq. No 11	Article Article 8	Ref. in National Report
Question/ Comment	Was in the Final Safety Assessment for MVDS Paks a deliberate crash of large plane (weight > 2000 kg) assumed and assessed. If yes, whit which results and if not, please provide justification of this decision.	
Answer	Section 2 of the FSAR summarizes the external man-induced events affecting the safety of the ISFS Facility. However these external events do not cover deliberate attacks. The probability/frequency for a military plane crash (Phantom RF-43) has been assessed to 0.94E-07 event/year for the effective target area of 2922 m^2. The construction of the facility (built from heavily reinforced concret, no auxillary systems exist) seems to be advantageous to eliminate the impact of these external events.	

Seq. No 12	Article Article 9	Ref. in National Report
Question/ Comment	How is the status of spent fuel verified prior its storage in MVDS Paks (especially fuel tightnes).	
Answer	According to the Operation Limits and Conditons of ISFS Facility the following parameters need to be controlled: burn-up, decay time and enrichment. The limits have been established in the Final Safety Analysis Report. Administrative measures shall be applied to exclude fuel assemblies being untight. The effective verification of the tightness has been performed by the NPP (following its internal	

procedures) prior to the transportation to the ISFS Facility. Diagnostics of leakage are based on the primary coolant activities.

Seq. No 13	Article Article 9	Ref. in National Report

Question/ Comment: Did the operator of MVDS Paks reported any operational issues (e. g. leakage of tube seals, …) to the national regulatory body?

Answer: During the 8-9 years of operation of the ISFS Facility there were just a few technical difficulties. Recently, the increased level of the crud on the fuel assemblies transferred from the NPP results in more frequent HEPA filter changes in the ventilation system of the fuel preparation room in the Transfer Cask Reception Building. In spite of this difficulty, the evaluations of the operation from the radiation protection aspect show good results.
According to the Nuclear Safety Regulation Vol. 6 the licensee shall submit regular reports to the Hungarian Atomic Energy Authority regarding the activity in connection with the operation and safety of the facility. E.g. the quarterly reports summarize the leakage values for the nitrogen system so the trends could be followed properly.

Seq. No 14	Article Article 9	Ref. in National Report p. 52

Question/ Comment: It is stated in sections E.3.1 and G.1 that the license for interim spent fuel storage facilities is valid for a limited period of time. What are the main aspects which have to be considered during renewal of the license with regard to the safety of long-term interim storage? Do similar requirements apply to radioactive waste storage facilities?

Answer: The planned life-time of the ISFS Facility is 50 years. During this period the nuclear safety authority (HAEA Nuclear Safety Directorate) shall conduct regular Periodic Safety Reviews in the facility within ten years from first granting the operation licence, and also every tenth year after that, at the minimum. So the validity of the operational licence has been determined by these Periodic Safety Reviews. The content and formal requirements of Periodical Safety Reports are set forth in the Nuclear Safety Regulations (See Annex 3 of NSR Vol. 6).

According to the relevant regulation operating licence for a waste disposal facility can be issued also only for a determined duration, which – in case of meeting the operating conditions – can be extended for request repeatedly.

Seq. No 15	Article Article 11	Ref. in National Report

Question/ Comment: How is ensured a safety of long term storage liquid radioactive waste (concentrates and ionexchangers) from the point of view possible corrosion of storage tanks?

Answer: The Nuclear Safety Regulations summarize the requirements for periodic inspections and investigations. The operating organisation shall elaborate and implement detailed inspection and investigation programmes for the control, analysis and assessment of changes of safety systems, system elements and components occurring as a result of certain in-service effects (tensions, temperature, radiation, corrosion, erosion). This programme shall be elaborated on the basis of safety classification of systems and system elements, the analysis

of their possible failures and the relevant technical standards. In the course of drawing up the inspection programme, the maintenance conditions of system elements, the safety impacts of possible failures, as well as the possibilities of observing and monitoring the symptoms preceding failures must be taken into consideration.
The storage tanks are situated in premises where the surrounding walls are covered by stainless steel (design principle is 'tank-in-tank'). The potential leakage of the tank can be detected by a sensor settled into the sump. In this case the operator has a possibility to transfer the radioactive material into other storage tanks.

Seq. No 16	Article Article 11	Ref. in National Report
Question/ Comment	Taking into account possible formation of sludges in storage tanks for liquid radioactive waste, do you have an idea how such sludges will be removed form these tanks, treated and conditioned?	
Answer	Based on our experience gained so far, the sludge accumulated at the bottom of the tanks can be pumped out. (Up to now transportation of liquid waste between the auxiliary buildings through the pipe bridge has taken place several times). Sludge is planned to be conditioned using cementation technology but the use of microfilter of Greifswald reference has been investigated, too.	

Seq. No 17	Article Article 11	Ref. in National Report
Question/ Comment	Do you use regeneration methods for boric acid (H3BO3)?If yes, what is the impact of regeneration of boric acid (H3BO3) on minimization of radwaste?Is any further use for products of regeneration of boric acid (H3BO3)?	
Answer	Boric acids originating from emergency tanks, spent fuel storage pool, localization tower, primary coolant, primary leakages, etc. are purified by the Operational Ultra-Filtration System with the aim of reusing boric acid efficiently. Other new methods for treatment are in elaboration. The Liquid Radioactive Waste Treatment Technology is in commissioning phase. Borax generated by this technology could also be considered as a reusable material for further operation.	

Seq. No 18	Article Article 11	Ref. in National Report E3.2 & H2 p33&56
Question/ Comment	Article 11 (ii) requires each Contracting Party, at all stages of radioactive Waste Management to ensure that the generation of radioactive waste is kept to the minimum practicable. There is no mention in the report of minimisation and what processes or procedures are used to ensure this or how the regulatory body assures itself that this is being done. What legislation and regulatory procedures are in place to ensure that waste minimisation is practiced? What power does the Regulatory body (HAEA) have to ensure that minimisation is practiced and what practices or procedure does it use to enforce minimisation?	
Answer	The Nuclear Safety Regulations (Appendices to Govt. Decree 89/2005 (V.5.) prescribe the principle of minimisation as follows: 'The operations of the nuclear power plant have to be organised and systems, system components have to be designed in order to minimise the amount of the radioactive waste under all operating conditions of the design basis. The	

minimisation of the amount of radioactive waste has to be a number one priority throughout the entire lifecycle of the nuclear power plant.' (Nuclear Safety Regulations Vol. 3/5.186)

'The operating organisation shall elaborate and properly approve a complex documentation with regard to the management of radioactive wastes. The complex documentation shall include the activities targeted at implementing the following fundamental requirements:

a) minimising the quantity and activity of radioactive wastes produced during operation,
b) selective collection and storage of radioactive wastes by their activity-concentration and aggregate condition,
c) keeping the volume of radioactive wastes released from the facility to the environment under regulatory limits,
d) activities related to radioactive wastes, carried out in the facility, shall be in accordance with the national programme of radioactive waste management.' (NSR Vol. 4/14.001)

The resolutions issued by the HAEA Nuclear Safety Directorate also contain prescriptions for the minimisation of radioactive wastes.

Finally, the conditions for enforcing activities of the HAEA have been established in the Governmental Decree 114/2003 (VII.29.) and in the Enforcement Policy of the Regulatory Body.

Seq. No 19		Article Article 12	Ref. in National Report
Question/ Comment	It is stated that the retrieval of certain types of waste from Radioactive Waste Treatment and Disposal Facility will have to take place. Are there any plans or programs how to retrieve unsuitable waste from disposal facility? If yes, can you be more specific about it?		
Answer	The part of the safety upgrading strategy involving recovery of the wastes, sorting, removal of sources and other safety critical wastes, will be undertaken in the short to medium term, and has been elaborated in a concept plant design. It is intended to undertake a demonstration project in which four vaults, including one containing some backfill, are dealt with. This will be essential to ensure that details of the programme are correctly worked out in advance of committing to a complete recovery strategy. The waste was originally loaded directly into the vaults by the operators and it is a reasonable assumption that it can be removed in the same way, without the need for special remote handling equipment. Hence the equipment required can comprise largely conventional industrial tools, and the retrieval process is concerned mainly with contamination control. The approach is simple and robust. A containment tent will be used protected by a weather-proof outer tent. The earth cap currently covering some vaults can be removed using entirely conventional civil engineering. The material will need to be monitored, but is unlikely to be contaminated and will probably be disposed of as free-release material or retained on site for future use. The two key activities that will always be required are: remove the slabs covering the vault; remove the waste. It is proposed that the waste is removed using a		

commercial-quality hydraulic arm. It is likely that three different grabs will be required to pick up: bagged material, small dense items, such as shielded sources and debris from failed drums etc. In addition, if the vault has been backfilled with concrete, some means will need to be found to deploy a pneumatic or electric breaker.

To minimise the spread of contamination, waste will need to be posted out of the tents in a controlled fashion. The method of transferring drums will depend on the hazard presented by each vault, and therefore could be expected to vary from vault to vault. At one extreme, drums could be introduced into the vault tent and filled directly, before being given a wipe up and a check before being dispatched to the Processing Facility. At the other extreme, if heavy levels of contamination and/or α-emitters are anticipated, a fully engineered double-lidded posting system may be required.

In the case of a backfilled vault it is expected that the loose rubble produced by the breaker will be lightly contaminated and will need to be sealed in a drum as with the other waste. However, since there is no further treatment required it can be stored adjacent to the vault and returned as soon as convenient. Having removed the waste from the vaults, all other activities (waste assay, segregation, removal of critical item, conditioning, compaction, etc.) will be performed int he Processing Facility.

The precise methods will be determined by the implementer of the demo project. The tendering process for selecting the implementer is in progress.

Seq. No 20	Article Article 12	Ref. in National Report Section H Page 56

Question/ Comment: Are the mentioned study reports submitted to independent technical expert reviews?

Answer: Studies addressing the safety of the repository were of two kinds. First post-closure safety assessments were carried out between 1999 and 2001. The overall scope of these assessments was to establish whether the site will perform safely in the future or whether remedial actions are necessary to achieve adequate performance. Beside the safety assessment carried out by Hungarian experts a project was funded under the European Commission Phare programme to assess the safety of the facility. The project was awarded to AEA_Technology (UK). Both assessments drew the same conclusions: measures should be considered in order to guarantee post closure safety of the repository.

Having identified the key issues in the safety assessment, further work had to be undertaken to resolve the identified issues, leading eventually to a position in which full assurance of the post-closure safety of the repository can be provided. Hence in the second phase studies were performed aiming at providing a consistent scheme for analysing the problem situations and for ensuring that all factors essential for successful implementation were addressed. The intervention logic had to be sufficiently prepared.

In this step again external assistance and collaborations were used. The aim of the follow up PHARE project was to decide on the most appropriate and acceptable method of safety upgrading. The work was undertaken by Serco Assurance (UK) and RWE Nukem in close collaboration with the Hungarian experts.

Besides the Hungarian part and the PHARE projects, the third ‘pillar’ of the technical co-operation in the safety enhancement programme is the IAEA. Based

on the outcome of the feasibility study, the preparation (licensing, provision of the logistics, etc.) and the implementation of the selected option are supported by this IAEA Technical Assistance programme.
All these international collaborations have provided independent technical expert reviews.

Seq. No 21	Article Article 12	Ref. in National Report
Question/ Comment	It appears that the refurbished Radioactive Waste treatment and Disposal Facility (RWT&DF) is intended for disposal of medical, research and industrial waste "for several years". Further, on a separate track, a geologic repository will be developed for NPP process and decommissioning waste. What will be the fate of medical, research, and industrial waste when the RWT&DF reaches capacity? What is the anticipated fate of the waste that has previously been deemed unsuitable for and retrieved from the RWT&DF?	
Answer	On the basis of the safety assessment undertaken, it is believed that the disposal of additional wastes might be possible without impacting adversely on performance. However, given the high consequences calculated for certain scenarios, we consider that it would be unwise to dispose of significant additional inventories of certain radionuclides without demonstrating that there is significant conservatism in the current assessment. There may be scope for special waste treatment or packing measures that might mitigate the effects of additional disposals of certain key radionuclides. A focused study is planned to be undertaken based on an understanding of the inventory of additional arisings that might be disposed of. Bearing this approach in mind, in the framework of a demonstration program, which is due to start in late 2006, measures will first be taken to provide additional disposal capacity at the site while conducting a safety upgrading test by retrieving waste packages from four vaults (capacity of each vault is 70 m^3). Then in the second phase, after a careful evaluation of the demonstration phase we will decide on how many other vaults are worth to be opened. This decision will be supported by a new safety assessment based on the reduced inventory. If the demo project is proven successful, disposal space enough for decades will be created in the course of the second phase of the recovery operation. By the end of this period, a geologic repository is supposed to be available to receive those long-lived wastes temporary stored in Püspökszilágy facility that are not amenable for disposal in near surface repository. The long-term storage of this waste is solved on site in the Operational Building which was accomplished in 2004. 50 pipe wells are implemented there for storage of long-lived spent radioactive sources. Further on, the space in the basement provides option for interim storage of nearly one thousand drums.	

Seq. No 22	Article Article 13	Ref. in National Report
Question/ Comment	Are there information centres for maintenance of the relations with the local communities in the vicinity of the sites where the construction of URL and LLW/ILW repository is planned?	
Answer	In 2003 in the venue of the potential repository (Bátaapáti) an exhibition hall was opened. The international experiences and the domestic approaches are being shown. Interest in activities in Bátaapáti has increased since the start of the underground	

investigations, and the visitors come not only from the hosting municipality but from the entire region. In 2004 and 2005 a travelling exhibition was organized in the region of the planned repository.
There are exhibition halls in two villages at the HLW investigation area. In 2003 an information park has been opened in this area.. The information park is an open air exhibition aimed at providing a comprehensive picture for the visitors about the Hungarian radioactive waste disposal practice and research work.
In 2005, the travelling exhibition mentioned above reached the municipalities in the HLW investigation area.

Seq. No 23		Article Article 13	Ref. in National Report
Question/ Comment	Does the population of Puspokszilagy benefit from any "special privileges" and if it does how are they defined and what is their source of financing?		
Answer	According to Act of 1996 on Atomic Energy, in order to regularly provide information to the population of the communities in the vicinity of the facilities, the licensee of a radioactive waste disposal facility shall promote the establishment of a public control and information association and can grant assistance to its activities. The source of the financial support is the Central Nuclear Financial Fund. In 1998 three municipalities adjacent to the Püspökszilágy repository established the Isotope Information Association (IIT). In 2000 one, in 2002 three new municipalities joined the Associations. An agreement was reached with repository operator (PURAM) on the conditions of the financial support. A yearly fix amount is allocated for the Association. The allowance is revised annually and corrected according to the inflation rate. It is then the decision of the Association to distribute it among them. Formerly the benefit could only be used to provide information to the population of the communities. In 2006 the law has, however, been amended and the support from now on can also be used for regional or municipal development.		

Seq. No 24		Article Article 14	Ref. in National Report Section H2 p56/57
Question/ Comment	The report states that consideration is being given to several options for the further use of the Radioactive and Waste treatment facility and refers to the optimisation of the balance between actual doses incurred from intervening to rectify deficiencies against the potential future doses from the facility. What is the basis of the methodology that is to be used to examine this issue? Will this methodology include a safety assessment of the safety of the facility under fault conditions by the prevention of faults that could lead to an uncontrolled release of radioactivity or in the event of an accidental release, to limit its impact?		
Answer	Comprehensive safety assessments show necessity to remove certain waste containing long-lived radionuclides (^{239}Pu, ^{232}Th, ^{238}U and ^{226}Ra). Several of these nuclides have been included into the site inventory database only as an estimate, so their cumulative inventory is rather uncertain. Based on the plans to use this site for the upcoming 20-30 years, dose considerations of the present regulations (0.1 mSv/y dose constraint) for normal evolution and individual risk of 10^{-5} for disruptive event consequences are to be applied. Safety assessment methodology includes the issue of consequence analyses for		

disruptive events and they can lead to override the risk limits during the institutional control period (allowing accident consequence mitigation) but at the end of the passive institutional control period we have to meet the risk limit.

Seq. No 25		Article Article 16	Ref. in National Report
Question/ Comment	Provide information on the procedures for characterisation and segregation of radioactive waste.		
Answer	The radioactive waste is collected by physical condition (solid and liquid). For liquid waste the selective storage is applied to the following waste types: • ion-exchange resins (one tank for two units), • acid solution for evaporator (waste water containing nitric acid generating when the evaporation line of the water cleaning system No. 3 of the NPP is treated by acid), • evaporator concentrate (produced by an unorganized leakages, decontamination solutions, transport waters for ion-exchange resins, waste waters of high saline content generated by evaporation of contaminated boric acid solutions). As the solid wastes are concerned, the dose rate measured at the surface is base of the segregation. Due to practical reasons low and intermediate level wastes are treated together. In case of low and intermediate level wastes, compactable and non-compactable wastes are treated separately. Moreover, in a way of trial, selective collection of the hazardous wastes generating in the control area has been introduced. Treated wastes are put to drums of 200 l. Procedures for characterization of radioactive wastes: liquid wastes: analyses of samples taken from the different layers of the storage tanks (gamma-spectrometry, inactive components etc.), solid wastes: 15-20% of the drums are characterized in detail (drum scanning). For each drum the surface contamination and the dose rate is measured at 10 cm distance from the surface of the drum.		

Seq. No 26		Article Article 16	Ref. in National Report Section F6, page 47
Question/ Comment	The report notes that the operator of each nuclear facility has to prepare a decommissioning plan and reports in several places that the decommissioning plans are reviewed and can be revised before each stage of decommissioning. Do all nuclear licensed facilities currently have a Decommissioning plan? Are the Decommissioning plans of facilities reviewed on a regular basis? What is the frequency of review of these plans, are they reviewed as part of the Periodic Safety Reviews and do these reviews reflect changes in the facility and advances in the technology?		
Answer	Currently all nuclear facilities in Hungary are in possession of Preliminary Decommissioning Plans. The Nuclear Safety Regulations (NSRs) summarize the general safety requirements for decommissioning as follows: 'The Licensee shall prepare the plan or have it prepared related to the decommissioning (final shut down and disassembly) as an integral part of the planning process and according to the given phase of life-cycle of the unit. The		

essence of this plan shall be included in the Preliminary and then the Final Safety Report. After the beginning of the operation of the unit the plan shall be updated as a separate document in every five years based upon the events and experiences of the operation as well as the changes in the statutory provisions and considering the possible changes in the technical and economic context. Regardless of the five-year cycles of updating 5 and 1 year before the final shutdown of the reactor the Licensee shall hold a decommissioning licence detailed on the level of the given phase of life cycle of the unit.' (NSR Vol.1/2.064).
'The documentation including the final version and the method of execution of decommissioning shall be prepared 1 year before the final shut-down of the reactor tat serves as a basis for the applications to be submitted to the Authority.' (NSR Vol.2 /2.066) .

Seq. No 27		Article Article 17	Ref. in National Report
Question/ Comment	The provisions of Article 17 concerning institutional measures after closure should be addressed.		
Answer	The Decree of the Minister of Health, Social and Family Affairs 47/2003. (VIII. 8.) regulates the application of the institutional control tools. Following the closure, particular licence shall be obtained for the changeover to active institutional control, and after its completion another licence shall be obtained for the commencement of the passive institutional control. For the closure licence application of the waste disposal facility, closure plan (including the decontamination plan for the site of the disposal facility), safety report and plan for changeover to active institutional control shall be submitted. The closure plan of the disposal facility shall ensure that during the active institutional control the maintenance and supervision demands are minimal. For granting the licence of the active institutional control, safety report considering the whole operation (waste quantity, modifications) shall be prepared. The licence shall contain the active institutional control requirements and the length of the control period. The active institutional control period lasts at least 50 years, the extension of which can be decided by the authority based on the results of the periodical safety reviews. The task of the active institutional control period is the control and monitoring of the environmental conditions and processes and of the measurable concentration of radioactive isotopes in the environment. In the case of surface storage facilities of the repository, the maintenance of the manageable components of the disposal system and the limitation for the utilisation of the site for other purposes could be taken into account. If at any period of the active institutional control an unplanned release of radioactive materials to the environment or its possibility is observed, in justified case the regulator orders action to restore or improve the environmental safety. In the licence relating to the passive institutional control, the length of the inspection period and the necessary requirements shall be prescribed. According to the Decree, after closure the radiation exposure to the individuals of the control group due to the effects of the disposed waste shall not exceed the effective dose of 100 μSv/year. The design of the disposal facility (including the geographical co-ordinates of the		

site) and the records of the stored waste shall not be discarded.

Seq. No 28	Article Article 19	Ref. in National Report

Question/ Comment: The report mentions „Decree of the Minister of Industry, Trade and Tourism 62/1997. (IX. 26.) on the geological and mining requirements for the siting and planning of nuclear facilities and radioactive waste disposal facilities.“ Please provide additional details regarding this Decree.

Answer: Decree of the Minister of Industry, Trade and Tourism 62/1997. (IX.26.) is an executive order of Act CXVI. of 1996 on atomic energy regulating, among others, the geological and mining requirements for the siting and planning of nuclear facilities and radioactive waste disposal facilities. The outline of the decree is as follows

1) Investigation of Geological Suitability
    a. The method of investigating the geological environment shall be geological research.
    b. The geological data required for a complex safety assessment shall be determined in the course of the geological research.
    c. The geological suitability of the potential and the selected sites shall be investigated and certified in the final geological research report.
    d. Engineered barriers shall be planned and constructed so that their interaction with the geological environment does not endanger the geological barrier.
    e. The selection of sites for nuclear facilities and radioactive waste disposal facilities and the investigation of geological suitability shall be divided into phases, which shall be determined during preparation and approval of the geological research plan.
    f. The Hungarian Geological Survey shall approve the geological research plans forming the foundation for the individual research phases and the final geological research reports concluding the research phases.
    g. The contents of the geological research shall be determined on the basis of the geological requirements specified in 4), the aspects of geological investigations listed in the Appendix I, and the special geological requirements detailed in the Appendices I-IV.
    h. During the geological research, it shall be taken into consideration when selecting the research methods and planning the number and location of research facilities, that no damage should occur to the favorable characteristics of the potential host formation and the geological barrier. In the event that damage occurs, the party conducting the geological research shall be required to restore it to its original level of geological suitability.
    i. The geological research and the facilities shall be planned in such a manner as to allow for continuous surveillance of the geological environment and institutional control of the facility
        i. prior to its operation,
        ii. during its operation,
        iii. and after its closure or shut-down.
    j. The behavior of the host formation and the geological barrier, any escape or migration of radioactive isotopes into the geological

environment shall be presented in safety assessments, safety reports and environmental impact studies which shall be prepared

i. at regular intervals during operation,
ii. upon occurrence of any event which was not taken into account in the planning basis,
iii. prior to decommissioning or closure,
iv. at regular intervals during the institutional control after decommissioning or closure of nuclear facilities and radioactive waste disposal facilities.

2) Quality Control

During the planning of the geological research, a quality control system shall be developed and such system shall be implemented during execution of the research.

3) General Geological Requirements

a. Facilities may be sited at locations where
   i. the geological environment of the site, the host formation and the geological barrier are able to be thoroughly investigated and modeled, using the given level of science and technology;
   ii. the level of geomorphological, geomechanical, seismological, volcanic, hydrological and mineralogical-petrological and geochemical stability of the geological environment, as calculated in the safety assessment, can be certified;
   iii. the geological barrier is characterized by properties, which, to the extent calculated in the safety assessment, prevent the migration of escaped radioactive isotopes into the geological environment;
   iv. the mineralogical-petrological, geochemical and geomicrobiological effects of the geological environment do not pose a threat to the engineered barriers.

b. A site may not be designated at a fault zone where there has been a surface displacement during the last one-hundred thousand years.

c. Following designation of a potential site, a microseismic monitoring network shall be installed and operated continuously for a period of at least three years. Direct and indirect effects resulting from an earthquake (soil liquefaction, stability of slopes, etc.) shall be taken into account during the planning of the facility.

d. Non-renewable or conditionally renewable natural resources and protected valuable geological sites or ones deserving protection, which are rendered inaccessible by the potential site shall be taken into account in the economic assessment of constructing the facility.

e. In addition to the requirements set forth in (a)-(d), a facility may only be sited where
   i. the size of the host formation is sufficient to accommodate the facility and there are homogenous geological properties within this space;
   ii. in the event of failure or destruction of the engineered barriers, the geological barrier must have the capability to

retard or prevent the escape or migration of radioactive isotopes by way of retention, retardation or adsorption and this property shall remain for the period of time taken into account in the safety assessment;

iii. the hydrogeological system ensures that the radioactive isotopes will reach the surface after an appropriately long retardation period as taken into account in the safety assessment, and that the concentration of such isotopes will be reduced to a level which is acceptable for radiological protections considerations;

iv. the geological environment offers protection from changes in surface climate conditions, erosion, hydrographic changes and human intervention which endanger or pose a risk to the facility.

f. Licensing of the disposal of high-level and long half-life radioactive waste is only permitted for deep geological storage facilities, where the geological environment itself ensures the fulfillment of the radiological protection requirements.

4) General Mining Requirements
5) Procedures of the Specialized Mining and Geological Authorities
6) Closing Provisions

Appendix I: Special geological requirements of siting of nuclear facilities
Appendix II: Special geological requirements of siting of deep geological disposal facilities for HLW
Appendix III: Special geological requirements of siting of deep geological disposal facilities for LILW

Seq. No 29	Article Article 19	Ref. in National Report Section E3 p33-36

Question/ Comment: It is noted that there are facilities, of various types, which will eventually undergo decommissioning. There appears to be no reference in the report to the regulatory mechanism for releasing a decommissioning site for unrestricted use. What process will be used to release a site from regulatory control after the completion of decommissioning? What safety and environmental criteria will be used to determine whether decommissioning has ended and the site operator can be relieved of its responsibility for the safety of the facility?

Answer: In the case of unrestricted use (unconditional clearance), the licensee is expected to perform a safety assessment including different exposure pathways demonstrating that the radiation exposure due to releasing for unrestricted use will not exceed the dose limit of 30 μSv/y given in the Decree of the Minister of Health 16/2000. (VI: 8.). The authority (the Office of the Chief Medical Officer) requires case by case approach with strict and frequent review of the studies.

The Ministerial Decree 16/2000. (VI. 8.) does not stipulate any predefined limits for unconditional clearance (besides the dose limit 30 μSv/y); nevertheless other limits (activity concentration) can be derived from the dose limit of 30 μSv/y on the basis of a verification study.

On the other hand, the Decree of the Minister of Environment 15/2001. (VI. 6.) sets out the requirements for the release (discharge) from a facility into environment. All relevant radioisotopes have to be considered in the release (discharge) process. The authorized dose constraints (determined by the Office of the Chief Medical Officer) have to be applied for the derivation of the activity concentration of the different radioisotopes for limiting the release into environment (see expressions below). This derivation is verified on the basis of a study for the different releases and exposure pathways.

At the moment, in Hungary, preliminary studies are being carried out for the clearance (including unconditional/conditional) processes and for the other technical aspects of decommissioning of nuclear site. So the exact criteria regarding the end of decommissioning and the authorized dose constraints for decommissioning of nuclear reactors will be determined within few years. It is worth remarking that the criteria system will be in line with the establishment of new repository of L/ILW and the radioactive waste policy concerning nuclear reactors, too. Regarding the radiation and environmental safety a similar criteria system was set up earlier for decommissioning and remediation of uranium mining and milling site.

Seq. No 30		Article Article 24	Ref. in National Report
Question/ Comment	What are the radiological safety criteria for waste disposal and how were they determined?		
Answer	Appendix 4 of the Decree of the Minister of Health, Social and Family Affairs 47/2003. (VIII. 8.) specifies the requirements for disposal: • The design basis shall be determined during the licensing of the installation or modification of the facility. • At the determination of the initiating events in the risk analysis, the events and event-combinations featuring less than 10^{-7} event/year probability could be ignored. • In case of conditions postulating the expected behaviour of the disposal system, after closure, the radiation exposure to the individuals of the control group due to the effects of the disposed waste shall not exceed the effective dose of 100 μSv/year. External – human or natural originating – events or event-combinations affecting the disposal system during its lifetime, which are beyond the design basis, shall be evaluated with the application of the risk criteria. As a result of these, the resultant risk of the events entailing overexposure of any individual of the population shall not exceed the value of 10^{-5} event/year. Ministerial Decrees 16/2000, 23/1997 and 47/2003 (see Annex 4 of the National Report) prescribe all aspects of radiation protection and these decrees are in concordance with the Directive 96/29/Euratom. Hungarian regulations (standards) were derived on the base of the international regulations (EU) and recommendations (ICRP, IAEA), hence they are in accordance with them.		

Seq. No 31	Article Article 25	Ref. in National Report

Question/ Comment: Would you provide more details on the procedure for action in the case of illicit transboundary traffic of nuclear or radioactive material and in the case of detection of such material in scrap metal on the Romanian territory? Where is such material stored and how is it treated?

Answer: Hungary promulgated the Decree of Government No. 17/1996. (I. 31.) on measures related to found or seized radioactive or nuclear materials, which defines the adequate operating procedures and priorities including the corresponding notification channels between the related authorities and expert institutions. The primary purpose of the response is to bring the situation under appropriate radiation control by implementing radiation protection procedures. As a first step - if it can be assumed that an object is a radioactive or nuclear material - the police, competent border police or customs authority body has to prevent persons from approaching the area and to notify the Main Duty Office of National Police Headquarters (MDONPH) without delay. In addition to notifying its own responsible units, the MDONPH reports the incident to the duty offices of the following organs

(a) the Ministry of Health (in order to have a health physics expert dispatched to the spot),
(b) the National Security Office (NSO) of the Republic of Hungary,
(c) the Hungarian Atomic Energy Authority (HAEA),
(d) the National Headquarters of the Hungarian Border Guard (in case of incident near the border or at a border crossing point),
(e) the National Headquarters of the National Board of Customs and Excise (in case of incident including materials or customs goods entering from abroad).

The health physics expert has to be informed on the spot about the measures taken, and the conditions required for him to conduct his work have to be ensured. If he determines that the material is radioactive, he has to

(a) take a preliminary inventory of the material
(b) inspect the packaging, and have the materials collected if necessary
(c) decide on the method of transporting the materials, based on the preliminary radiation protection measurements
(d) keep a record of the facts he establishes and the measures he orders.

If the material can be transported by car, it shall be taken to the National Research Institute for Radiobiology and Radiohygiene (NRIRR) of the National Public Health Centre to the storage site designated for this purpose. If the material cannot be transported in this way the health physics expert has to contact the Institute of Isotope of the Hungarian Academy of Sciences (IoI), which has to transport the material to its own site as soon as possible. The expert has to determine the radiological safety and other conditions for the transportation of the material from the site to the storage area. If it is considered necessary, then these conditions (packaging, licensing, labeling, shipping papers) may diverge from the provisions set forth in the Appendices „A" and „B" of the European Agreement Concerning the International Carriage of Dangerous Materials by Road. Such derogation cannot be applied for further transportation of the material at a later time. NRIRR

- on the basis of the tests it carries out – has to provide the health physics expert opinion required for the various procedures. If the material proves to be nuclear material, NRIRR has to inform immediately the IoI and they have to agree on the applicable measurement methods. Following the completion of the health physics analyses, IoI has to transport the material to its own site. If the material was transported directly to the IoI site, IoI has to agree with NRIRR on the applicable health physics analyses methods. In order to fulfill the accounting and control obligations for nuclear materials, IoI has to conduct tests on the nuclear material. NRIRR and IoI have to inform the police, the NSO and HAEA regarding the results of analyses. If the material is serving as forensic evidence, the regulations governing the handling and recording of objects seized in criminal proceedings shall be observed when taking samples of the material, as well as during the testing and storing. In the interest of promoting international cooperation in relation to the illegal trafficking of such materials, HAEA provides data for the databank established by the International Atomic Energy Agency (IAEA). In case of nuclear materials HAEA, on the basis of the IoI report, sends a report on the material to IAEA.

Seq. No 32	Article Article 25	Ref. in National Report
Question/ Comment	What is the periodicity for verification of National Emergency Response Plan?	
Answer	The periodicity for verification of NERP is in compliance with the recommendation by the IAEA International Regulatory Review Team and it is in close connection to the full-scope national exercises performed in every 5th year. In 2002 the elaboration of the new NERP was finished. On 9-10 November 2004 a „national nuclear emergency response staff management exercise" took place in Hungary, organised by the Governmental Co-ordination Committee. (The Chair of this Committee is responsible for the reviewing process of the NERP). All the organisations responsible for nuclear emergency response outside of those working at the location of Paks NPP participated in the event. The objectives of the exercise was completely attained and it was considered successful by both Hungarian and international observers. The drawing of conclusions and specifying of further tasks were carried out in 2005. These results could affect the next review of the NERP.	

Seq. No 33	Article Article 25	Ref. in National Report
Question/ Comment	What are the criteria for classification of facilities?	
Answer	The criteria comply with the IAEA recommendations for emergency planning categories given in TECDOC-953, Table 1. The Interim Spent Fuel Storage Facility at Paks falls into Category II.	

Seq. No 34	Article Article 25	Ref. in National Report
Question/	Are cross-border emergency exercises carried out with neighboring countries?	

Comment

Answer Hungary as a Member State of the IAEA and OECD NEA regularly takes part in the international nuclear emergency exercises. But these exercises concern mainly NPPs and not storage facilities. Because there is no storage facility in Hungary jeopardizing the neighboring countries, it seems that these special exercises would be unnecessary.

Seq. No 35	Article Article 25	Ref. in National Report Section F Page 43

Question/ Comment Could Hungary provide data on the observed doses measured on workers of the concerned facilities?

Answer

The average and maximum annual doses for workers on the basis of data provided by the National Dosimetry Service:

	2001	**2002**	**2003**	**2004**	**2005**
KFKI-AEKI [a]					
$N^{(b)}$	34	33	23	21	17
H_{ave} (mSv)[c]	0.52	0.45	0.84	0.66	0.90
H_{max} (mSv)	1.8	3.2	2.3	3.2	2.7
Training Reactor					
$N^{(b)}$	3	0	2	1	0
H_{ave} (mSv) [c]	0.19	-	0.99	0.34	0.00
H_{max} (mSv)	0.27	-	1.56	0.34	0.00
Paks NPP[d]					
$N^{(b)}$	988	1030	1176	721	816
H_{ave} (mSv) [c]	2.5	2.9	3.2	2.5	2.7
H_{max} (mSv)	15.5	19.4	16.6	14.9	16.6
Puspokszilagy RWDT					
$N^{(b)}$	2	0	0	0	0
H_{ave} (mSv) [c]	0.28	-	-	-	-
H_{max} (mSv)	0.29	-	-	-	-

[a] including the staff of Budapest Research Reactor
[b] number of workers who received dose above registration level (0.1 mSv)
[c] average dose of workers who received dose above registration level (0.1 mSv)
[d] with the workers of ISFS

Seq. No 36	Article Article 25	Ref. in National Report Section F.5.4, p. 46

Question/ Comment Could you provide an initiating event or a short description of a scenario for the last managerial and/or general exercise in the Interim Spent Fuel Storage Facility, which are performed yearly? Was the complex national level exercise in 2004

nt	somehow related to radioactive waste? If yes, can you provide a brief description?
Answer	All the exercises mentioned in the Report were carried out by the staff of Paks NPP and ISFS Facility together. The scenario has been developed for the NPP and not for the storage facility. But the emergency management organisation established at the Paks NPP is capable of managing accidents in the other facility where the worst case scenario would be the cutting a fuel assembly in two separate parts. The national-level exercise in 2004 was not related to spent fuel or radioactive waste management.

Seq. No 37		Article Article 25	Ref. in National Report
Question/ Comment	It is mentioned that national-level exercise had been conducted in the year of 2004. What is the frequency of national-level exercises?		
Answer	The frequency of the full-scale national-level exercises is 5 years, according to the recommendation by the IAEA International Regulatory Review Team (2000).		

Seq. No 38		Article Article 26	Ref. in National Report
Question/ Comment	Is there a duty of licence holder for operation of a nuclear facility updated decommissionig plan during operation? If yes, what time period is determined for updating of this plan?		
Answer	The Nuclear Safety Regulations (NSRs) summarize the general safety requirements for decommissioning as follows: 'The Licensee shall prepare the plan or have it prepared related to the decommissioning (final shut down and disassembly) as an integral part of the planning process and according to the given phase of life-cycle of the unit. The essence of this plan shall be included in the Preliminary and then the Final Safety Report. After the beginning of the operation of the unit the plan shall be updated as a separate document in every five years based upon the events and experiences of the operation as well as the changes in the statutory provisions and considering the possible changes in the technical and economic context. Regardless of the five-year cycles of updating 5 and 1 years before the final shutdown of the reactor the Licensee shall hold a decommissioning licence detailed on the level of the given phase of life cycle of the unit.' (NSR Vol.1/2.064). 'The documentation including the final version and the method of execution of decommissioning shall be prepared 1 year before the final shut-down of the reactor tat serves as a basis for the applications to be submitted to the Authority.' (NSR Vol. 1/2.066)		

Seq. No 39		Article Article 26	Ref. in National Report Section F6 page 47
Question/ Comment	An important aspect of planning the decommissioning of a facility is that appropriate records are available when they are needed and that the timescale for keeping the records is considerable. It is noted that inventories of waste have been compiled, but it is not made clear what mechanisms are in place for generating, keeping and storing records to ensure that all information, for example on design, operation, waste inventories and possible physical and chemical conditions of waste is kept for the long periods of time needed. What powers does the regulatory body have to ensure that the operating		

organisations of all facilities using radioactive materials, including those concerned with waste and spent fuel management and storage, have mechanisms for establishing what records are appropriate, and for the, collecting and storing of such records, so that they may be retrieved when needed?

Answer

The Act on Atomic Energy (1996) – the basic law constituting the basis of all regulations for the application of nuclear energy, including radioactive waste management – does address the issue of the record keeping in a general form:

• *Atomic energy may only be used in such a way that it does not damage human life, the health and living conditions* ***of present and future generations****, the environment and material assets beyond the socially-acceptable level of risk which is necessarily accepted in the course of other economic activities as well.*

• *In the application of atomic energy, provisions shall be made* ***for the safe disposal of radioactive waste*** *and spent fuel* ***in accordance with the most recent****, certified results of science****, international expectations****, as well as experience, in such a way* ***that no unacceptable burden is passed on to future generations****.*

The requirement to take into account the interest of future generations and to avoid passing on unacceptable burdens in accordance with the newest international expectations, practically means that the issue of long term information management and record keeping must be addressed by any application of nuclear energy – and consequently in radioactive waste management as well.

In addition to the own accounting and operating records (documentation) that shall be maintained by licensees, the Act also prescribes that central records shall be kept on nuclear materials, radioactive materials and preparations, including radioactive waste as well. The regulatory authority responsible for the system of central and local registries is the Hungarian Atomic Energy Authority (HAEA). The specific rules on keeping records of radioactive materials and preparations are laid down in separate legal regulation (Decree 33/2004. (VI.28.) of the Minister of Health).

According to this executive order the records should cover the basic inventory information (nuclide, activity, chemical and physical form and even the intended and actual use), for all types of radioactive materials (sealed sources and open substance as well). Although originally not designed to serve waste management purposes, the system – both the local registries and the central one – proved to be a very useful source of information for waste management as well. Acknowledging the possible specific need of certain licensees, a different record keeping system might be authorized by the HAEA on an individual basis. The regulation explicitly entitles the producers and distributors of radioactive materials as well as waste management and disposal facilities to develop their own record keeping systems, custom tailored to their specific operational needs. These individual record keeping systems must be fully documented and approved by HAEA. Therefore – although legally not required – through the approval process, the HAEA does have the authority to enforce specific requirements for the waste inventory record keeping systems of the major institutional waste generators and the waste management and disposal facilities. Since the number of affected organizations is limited to a few, this procedure seems to be adequate and efficient to address the issue of waste management record keeping in Hungary.

As far as the regulatory enforcement is concerned the HAEA is empowered to

perform inspection on the site of the licensee, according to an annual inspection plan based on the evaluation of the inventories, practices and regular reports of the licensee. In case of violation of the prescriptions, the HAEA is empowered to impose a fine on the licensee, according to the provisions of Governmental Decree 114/2003 (VII. 29.) on the Scope of Duty, Authority and Jurisdiction of Imposing Penalty of the Hungarian Atomic Energy Authority, and on the Activities of the Atomic Energy Co-ordination Council.
In case of an established deficit or surplus in the inventory of radioactive materials, HAEA notifies without delay the National Police Headquarters, the National Security Office and the National Radiation Hygiene Preparedness Services.

Seq. No 40		Article Article 27	Ref. in National Report I, page 61
Question/ Comment	Did the transboundary transport of spent fuel and radioactive waste take place in the reporting period?		
Answer	Hungary did not have transboundary transport of spent fuel or radioactive waste in the reporting period.		

Seq. No 41		Article Article 28	Ref. in National Report
Question/ Comment	Would you provide more details on your plans to implement the requirements of the EU Directive 2003/122 in your national legislation. How do you plan to implement the requirements of the Directive to the highly active radioactive sources, which are potential radioactive waste, and to the orphan sources?		
Answer	Implementation of the Council Directive 2003/122/EURATOM of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources (hereinafter: HASS) required the modification of the related national legislation. Basically we had to modify our central registry related provisions. In the Decree 33/2004. (VI. 28) of the Minister of the Interior on the local and central registration system of radioactive materials we introduced the annual inventory taking requirements. In addition, the licensee shall maintain a local registry of all radioactive materials by a computer program provided by HAEA free of charge. However, we did not change the entry level of the central registry for radioactive materials and – instead of the A1/100 value – we keep them registered above the exemption activities and exemption activity concentrations. In this way, practically all of the radioactive sources are considered as potential radioactive waste. As to the orphan sources, we promulgated the Governmental Decree 17/1996. (I. 31.) on measures related to found or seized radioactive or nuclear materials, which defines the adequate operating procedures and priorities including the corresponding notification channels between the related authorities and expert institutions. The primary purpose of the response is to bring the situation under appropriate radiation control.		

Seq. No 42		Article Article 28	Ref. in National Report J
Question/ Comment	With reference to this Section, Disused sealed sources, do the Hungarian legislation and regulations comply with the European HASS-directive (the Council Directive 2003/1227)?		

Answer The disused sealed source related provisions of the Council Directive 2003/122/Euratom of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources are basically implemented by the following provisions of the Act CXVI of 1996 on Atomic Energy (hereinafter: Atomic Act), Government Decree 240/1997. (XII. 18.) on the creation of an organization designated for the disposal of radioactive wastes and spent fuel, as well as for the decommissioning of nuclear facilities and the financial resources for its activities (hereinafter: Gov. Decree) and the Decree 16/2000. (VI. 8.) of the Minister of Health (hereinafter: EüM Decree) on the execution of certain provisions of Act CXVI of 1996 on Atomic Energy:

- *Atomic Act*: The licensee - in its scope of activity - is obliged to provide the technical, technological, financial and personnel conditions required for the safe use of atomic energy and for maintaining and developing safety, and furthermore to monitor continuously the radiation conditions in accordance with the most recent certified results of science, international expectations, as well as experience.
- *Atomic Act*: An organisation designated by the Government shall provide for the storage of any radioactive or nuclear materials found or confiscated.
- *Atomic Act:* The Central Nuclear Financial Fund (hereinafter the Fund) is a separate state fund pursuant to Act XXXVIII of 1992 on Public Finance exclusively earmarked for financing the construction and operation of disposal facilities for the final disposal of radioactive waste, as well as for the interim storage and final disposal of spent fuel, and the decommissioning (demolishing) of nuclear facilities.
- *EüM Decree*: The licensee shall ensure the transfer of a withdrawn, sealed radiation source to its final place of disposal. The transfer shall be reported to the responsible regional radiological centre and to the HAEA.
- *Gov. Decree*: Payments to the Fund shall ensure coverage for the costs related to the storage of radioactive waste which was finally disposed of prior to the establishment of the Fund as well as for the costs related to the temporary storage and final disposal of radioactive waste centrally disposed of with the institutes appointed for this purpose on the basis of rules of law.

Seq. No 43	Article Article 28	Ref. in National Report 63

Question/ Comment The report states that the central registry of sources has been updated to increase monitoring of source inventories and sources that have not been used for long periods of time. How does the registry track source transfers?

Answer According to the provisions of the Decree 33/2004. (VI. 28) of the Minister of the Interior on the local and central registration system of radioactive materials, which contains the registry related provisions for the implementation of Council Directive 2003/122/Euratom of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources:

- The licensee shall perform an inventory taking of the radioactive materials falling under the scope of its licence once in each calendar year in such a

way, that the time between two inventory takings shall not exceed 14 month. The result of the inventory taking shall be reported to the central registry within 10 working days following the inventory taking, in an electronic format supported by the central registry.

- If it seems to be desirable, the licensee shall perform an inventory taking of the radioactive materials falling under the scope of its licence upon the request of the Hungarian Atomic Energy Authority (HAEA).
- The licensee shall report each change in the inventory of the radioactive sources recorded in its registry to the central registry within 10 working days following the change, in an electronic format supported by the central registry.
- The change of name, address and the change in the person or entity responsible for the local registry shall be reported to the central registry within 10 working days following the change.
- If a licensee exports a sealed radioactive source and undertakes a commitment to take it back, this circumstance and the actual shipment shall be reported to the central registry within 10 working days.
- The licensee shall immediately report any deficit or surplus in the inventory of the radioactive materials to the HAEA and to the responsible regional radiological centre.

Seq. No 44	Article Article 29	Ref. in National Report
Question/ Comment	How is the construction of underground research laboratory financed?	
Answer	The Act on Atomic Energy established the Central Nuclear Financial Fund (CNFF) to finance the disposal of all radioactive wastes and the storage and disposal of spent fuel assemblies generated in Hungary. The construction of a future Underground Research Laboratory (URL) will be financed by CNFF, too. (For more info about the CNFF, see Section F.2.2.2 on p. 41 in the National Report) Although the commissioning of an URL is expected to take place only after 2016 the accumulation of the financial fund has already been started. When determining the annual contribution to CNFF paid by Paks NPP the cost of the establishment of an URL is taken into account, too.	

Seq. No 45	Article Article 32	Ref. in National Report
Question/ Comment	What methods are applied for radionuclide characterization of spent ion-exchange resins and sorbents? Do you apply characterization methods based on directly measurable parameters?	
Answer	Measurement methods that have been used are as follows: 1. taking in-situ gamma spectrum along the ion-exchange resin column, 2. gamma-spectrometic measurements of samples, 3. analytical processing of samples followed by measurement of the difficult-to-measure-nuclide (DMN). Determination of the DMN is carried out in designated external laboratories in universities and research institutes. Special isotope selective separation methods	

have been developed and used. The detection limits have been set to the value required to get the necessary information.

Seq. No 46	Article Article 32	Ref. in National Report

Question/ Comment: What methods are applied for conditioning of ion-exchange resins? What are the specific criteria applied to the conditioning product?

Answer: So far no conditioning has been used for spent ion-exchange resin. The present strategy is to store the resins separately in the auxiliary buildings.
Cement embedding is planned to be used for conditioning of spent ion-exchange resin.
The pertinent criteria are set in the waste acceptance criteria relative to the final repository. Restrictions are determined for following parameters:

- dose rate,
- activity content,
- surface contamination,
- compressive strength,
- free liquid,
- chelate and complex forming materials,
- leachability,
- homogeneity.

Seq. No 47	Article Article 32	Ref. in National Report p. 24

Question/ Comment: Would you explain your plans for treatment of disused sources that will be returned to Hungary in accordance with the contacts for sale of sealed sources? What are the expected to be returned amounts?

Answer: The treatment of disused source that are returned to Hungary is basically governed by the following provisions of the Act CXVI of 1996 on Atomic Energy (hereinafter: Atomic Act) and the Decree 16/2000. (VI.8.) of the Minister of Health (hereinafter: EüM Decree) on the execution of certain provisions of Act CXVI of 1996 on Atomic Energy:

- *Atomic Act*: The licensee - in its scope of activity - is obliged to provide the technical, technological, financial and personnel conditions required for the safe use of atomic energy and for maintaining and developing safety, and furthermore to monitor continuously the radiation conditions in accordance with the most recent certified results of science, international expectations, as well as experience.
- *EüM Decree*: The licensee shall ensure the transfer of a withdrawn, sealed radiation source to its final place of disposal. The transfer shall be reported to the responsible Radiation Hygiene Centre and to the HAEA.

For a returned disused source one of the possible options is to transport it to a final depository. However, another option might be – if it seems to be reasonable – the repeated use of the isotope content of the disused source for production of another source(s).
In 2003-2004 the exported sources with the most significant activities - expected to be returned - were sealed Co-60 sources (about 9 PBq on 24 certificates in

2003 and 19 PBq on 78 certificates in 2004) and sealed Ir-192 sources (about 0.4 PBq on 211 certificates in 2003 and 0.4 PBq on 175 certificates in 2004).

Seq. No 48	Article Article 32	Ref. in National Report
Question/ Comment	It is stated that the major part of the spent fuel was shipped back to the Soviet Union (later Russia) between 1989 and 1998. However, in the 1990's, contrary to the terms of the original agreement though in accordance with international practice, the responsible Russian authorities wished to have Hungary take back the residual radioactive waste and other by-products created during reprocessing. What is the estimated volume and activity of the HLW that will (or have been) shipped from Russian Federation to Republic of Hungary?	
Answer	Last shipment of spent fuels took place in 1998. The shipment was terminated immediately when Russia wished to modify the conditions of shipment in contrary to terms of the original agreements. Under the new Russian proposed condition (i.e.: Hungary has to take back residuals from reprocessing) the Hungarian party has not transported any assembly into Russia hence there are no residuals Hungary would receive back.	

Seq. No 49	Article Article 32	Ref. in National Report
Question/ Comment	The competent authority issued the operational licence for the Radioactive Waste Treatment and Disposal Facility in 1980. In the absence of waste acceptance criteria (WAC), the repository has accepted almost all kinds of radioactive wastes generated during the utilization of nuclear technology and isotope applications. Has the WAC been established in the meanwhile? If yes, can you be more specific about WAC?	
Answer	The original licence did not specify waste acceptance criteria (WAC). Based on the results of the the first comprehensive post closure safety assessment carried out in 2000 activity limits were derived for disposal of the long lived components. The main objective of this "interim" measure was to limit the concentrations of the safety-critical nuclides for the remaining disposal capacity (at that time some 100 m^3) with the anticipation to specify later a fully comprehensive WAC for the upgraded facility. In 2004, based on operational and post-closure safety considerations fully comprehensive WAC were developed and introduced that are in line with international practice.	

Seq. No 50	Article Article 32	Ref. in National Report
Question/ Comment	t is stated that another option - that of building a surface repository at Udvari - has been kept open as a possible alternative if, for any reason, the Bátaapáti (Üveghuta) project fails. Can you please point on the map of Hungary the position of Udvari?	
Answer	The small Transdanubian village named Udvari is located at 46° 36' north latitude 18° 36' east longitude, approximately 25 km west of Paks.	

Seq. No 51	Article Article 32	Ref. in National Report
Question/ Comme	It is stated that high level waste is generated basically only in Paks Nuclear Power Plant, in relatively small quantities. It is temporarily stored in the reactor halls in 1114 tube pits designed for this purpose. Up till the end of the year 2004, about	

nt	90 m3 of the storage capacity was filled up out of the total of 220 m3. Can you please provide us with more information on the origin and treatment and conditioning technologies of HLW from Paks NPP?
Answer	In the nuclear power plant when the dose rate at a distance of 10 cm from the surface exceeds 10 mGy/h the radioactive waste is categorized as high level. The NPP's high level waste can typically be grouped in two categories: Components activated as a result of the long-time neutron irradiation and removed from the reactor • intermediate rods (connecting element between control rod drive mechanism and control rod), • absorber assemblies, • test chains. Other solid materials originated from cleaning technologies: • Balduf filter cartridges, • soft waste resulting from decontamination. These wastes will be treated together with the decommissioning waste. At present only the interim storage should be provided in retrievable manner. Gripping of the intermediate rods, absorber assemblies and filter cartridges can be done individually. The retrievability of rest of the waste destined for interim storage in the wells is ensured by use of capsules of various size.

Seq. No 52	Article Article 32	Ref. in National Report
Question/ Comment	Can you be more specific on conditioning technology used for solidification of primary spent ion resins from Paks NPP?	
Answer	So far no conditioning has been used for spent ion-exchange resin. Cementation of the ion exchange resins is planned using a MOWA mobile equipment of NUKEM make. The specifically designed 200 and 400 l drums of "lost" mixing baffle type needed for solidification will be handled with crane and roller bed. Filled drums will be conveyed to the lid-positioning place. Having set markers on the lids, they will be fastened on the drums by use of crane and pneumatic wrench. Activity of the waste filled into the drums can be determined from samples taken from the transport line of the waste storage tank	

Seq. No 53	Article Article 32	Ref. in National Report
Question/ Comment	What is the current policy with respect of management of residual radioactive waste generated by the reprocessing of spent fuel from NPP Paks in former Soviet Union and Russia?	
Answer	Last shipment of spent fuels took place in 1998. The shipment was terminated immediately when Russia wished to modify the conditions of shipment in contrary to terms of the original agreements. Under the new Russian proposed condition (i.e.: Hungary has to take back residuals from reprocessing) the Hungarian party has not transported any assembly into Russia hence there are no residuals Hungary would receive back. Consequently Hungary's policy does not consider the management of the residual radioactive wastes from Russia.	

Seq. No	Article	Ref. in National Report

54		Article 32	D.2.1
Question/ Comment	In this Section, an annual individual dose criterion of 30 µSv is given for the release of radioactive substances from regulatory control. How does this comply with the BSS, where (Schedule 1) the respective criterion is given as of the order of 10 µSv?		
Answer	The Decree 23/1997. (VII. 18.) of Minister of Public Welfare is based on the directive 96/29 EURATOM, and this decree covers the exemption situation, the values are derived from 10 µSv/y of effective dose. The Decree 16/2000. (VI. 8.) of the Minister of Health when regulating the clearance process stipulates 30 µSv/y dose constraint (in order of 10 µSv/y) for the clearance process following the international recommendations.		
Seq. No 55		Article Article 32	Ref. in National Report D.2.4
Question/ Comment	With reference to this Section: what are the means to prevent the sedimentation and crystallisation of evaporator concentrates in the storage tanks so that they can later be recovered for conditioning?		
Answer	Selection of the evaporation technology and chemical parameters has been made in such a way that no crystalization would happen even from the solution cooled back to room temperature. Based on the experiments carried out in the 80s, the proper setting of the mole ratio of boric acid vs. sodium prior to evaporation will result in no boric acid crystallization from the evaporator concentrate of 200 g/l.		
Seq. No 56		Article Article 32	Ref. in National Report p. 43
Question/ Comment	What limits are applied to the operating staff and specifically to women of child-bearing age and to pregnant women?		
Answer	The Ministerial Decree 16/2000. (VI. 8.) issued by Minister of Health stipulates that occupational exposures to workers shall not be higher than 100 mSv effective dose limit during 5 subsequent calendar years, and the effective dose shall not be higher than 50 mSv in any single year. It stipulates also, among others, the dose limits to the members of the population, the sum of external and internal radiation exposure from artificial sources shall not be higher than 1 mSv/year not taking into account medical (diagnostic and therapeutic) applications. The summary of dose limitation is shown in Table 1.		

Table 1. Dose limitation system in Hungary

Categories	**Effective dose (whole body*)**	**Equivalent dose**
Exposed workers**	100 mSv/accumulated over 5 consecutive calendar years and 50 mSv/y	Eye lenses: 150 mSv/y Skin, limbs: 500 mSv/y

Workers in emergency situation	Elimination of the consequences of an accident: 50 mSv/case, Prevention of significant dose to the general public: 100 mSv/case, Case of life saving: 250 mSv/case	
Students, trainees (between 16-18 y)	6 mSv/y	Eye lenses: 50 mSv/y Skin, limbs: 150 mSv/y
Members of the population	1 mSv/y 5 mSv/5 y (special circumstances, approved)	Eye lenses: 15 mSv/y Skin, limbs: 50 mSv/y

**the joint external and internal exposure from the artificial sources used and from natural sources causing an increased radiation dose (not including medical exposure)*
*** the employment prohibition relating to pregnant women, nursing mothers and milky-nurses is stated in a separate decree.*

According to the Decree of the Minister of Public Welfare 33/1998. (VI. 24.), the pregnant women, nursing women and milky-nurse are prohibited to work under radiation situation.

Seq. No 57		Article Article 32	Ref. in National Report p. 23(D.2.2)
Question/ Comment	The report states that the generation rate of the HLW is 3-5 m3/y. What kinds of HLW, apart from spent fuel, are generated in the NPPs in Hungary?		
Answer	In the nuclear power plant when the dose rate at a distance of 10 cm from the surface exceeds 10 mGy/h the radioactive waste is categorized as high level. The NPP's high level waste (apart from spent fuel) can typically be grouped two categories: • components activated as a result of the long-time neutron irradiation and removed from the reactor, • intermediate rods (connecting element between control rod drive mechanism and control rod), • absorber assemblies, • test chains. Other solid materials originated from cleaning technologies: • Balduf filter cartridges, soft waste resulting from decontamination.		

Seq. No 58		Article Article 32	Ref. in National Report Sect. B.1.1, page 13
Question	The URL is projected to be finalized in 2012, and the repository is due to be		

/ Comment operational by the end of the 2040's. (.....) In mid-2004 an intensive fieldwork was started. Among others, the drilling of the first deep borehole – 1500 m – is in progress.The investigations have been supported by the adjacent nine municipalities

Q: What were the ways to obtain the public acceptance within the local municipalities? Does the legal system provide for adequate protection against any changes of this decision in the future, when the investment process, once accepted, will be already in progress?

Answer Boda Claystone Formation in West-Mecsek area was suggested as early as 1983 by Mecsek Ore Company (MÉV) for final disposal of radioactive wastes. This suggestion was based on several decades of detailed geological exploration related to uranium ore mining. The available quantity of information on the geological environment of the potential host rock was much more than on any other potential formations in Hungary. At regional level the most important stratigraphic, structural and geological anamorphotic relations of the Western Mecsek Mountains as well as the geological, mineralogical, structural, hydrogeological and geotechnical features of the overlying formations were well known. That was the reason that attention has been focussed on this area rather than starting investigations by nationwide screening.

In 1996 the Hungarian law established the legal basis of providing financial incentives for the supportive group of municipalities. According to the Act of 1996 on Atomic Energy, in order to regularly provide information to the population of the communities in the vicinity of the facilities, the licensee of a radioactive waste disposal facility shall promote the establishment of a public control and information association and can grant assistance to its activities.

In 1996 the six municipalities directly affected by the exploration programme and the Fellowship of Zsongorkő established the West-Mecsek Public Information Association. This association and Paks NPP (at that time the program manager) made an agreement on providing the local public with reliable and updated information about the actual status of the explorations. MÉV cooperated continuously and actively in the accomplishment of these tasks in accordance with the agreement.

During the programme regular information meetings including site visits in the mine were organised for the representatives of written and electronic media, the affected authorities and municipalities, as well as the technical and environmental organisations. People of this area have been living together with uranium mining/milling for more than 40 years. Supposedly, due to this fact and the rational, calm and fair approach of the above mentioned partners, in the course of short-term characterisation program there were not any movements claiming the termination or postponement of the explorations.

The ways to reach people and engage in communication have been as follows: exhibitions, professional visits, printed and on-line information, cultural and information programs.

Financial assistance is also provided: according to the Act on Atomic Energy the West-Mecsek Public Information Association can receive grant from the Central Nuclear Financial Fund. In 2005 it was 130 M HUF (0.52 M Euro).

In 2004 the West-Mecsek Public Information Association requested the president of the Hungarian Academy of Sciences to provide an independent professional

oversight of the siting procedure. In response to the request an ad-hoc committee of three prominent scholars has been nominated who follows with close attention the investigations ever since.
The local partnership works merely on the basis of a “gentlemen’s agreement”, assuming that communities can withdraw from the process at any time. It is recognised that granting a veto right, even on an informal basis, to host communities is an important factor of local support. The explicit consent of the residents needs to be sought, by the appropriate means, e.g., through a local referendum or a vote of the community’s elected representatives.

Seq. No 59		Article Article 32	Ref. in National Report Page 17

Question / Comment

What kind of communication strategy is used to get support by a stakeholder (in case of preliminary exploration sites, potential site at Bátaapáti, etc.)?

Answer

The key feature of the Hungarian L/ILW siting process is voluntary participation of communities.
Once the location of the suitable geological objects was known based on a nation-wide sceening, a decision had to be made. There were three independent factors to be taken into account. The first is the geological characteristics, the second is the technical feasibility (site access and constructability) and the third is the public acceptance. The performance of each site could be scored in respect to these factors. The ideal situation would have been if the same site was found the best on the basis of each consideration but this was not the case. Thus the factors had to be weighted and this could not be done on a scientific basis but a political decision was required.
In-situ investigations were to be only started in case of voluntary acceptance by the communities concerned. A letter was sent to each community in the regions concerned to offer them the opportunity of participating in the project. The first letter was only introductory, nothing had to be decided on. Great emphasis was put on explaining to them that the repository unit will only be built in a village where most of the residents agree to it. Those, who formally expressed interest, were involved in the next phase of the project. Information sessions were held, visits have been organised to the nuclear power plant and the existing waste disposal facility to show the residents how the wastes are produced and how they are dealt with. The visitors could also meet the men and women working in these facilities and they could see that they were ordinary people, just like themselves. This experience might be able to turn the mystery that nuclear technology represents to most people into a rational mental image.
The key word is partnership: the local communities must be ensured that there is a long-term commitment to interaction otherwise they might fear that once the repository has been filled up, they will be left to themselves with the wastes.
In 1996 the Hungarian law established the legal basis of providing financial incentives for the supportive group of municipalities. According to the Act on Atomic Energy, in order to regularly provide information to the population of the communities in the vicinity of the facilities, the licensee of a radioactive waste disposal facility shall promote the establishment of a public oversight and information association and can grant assistance to its activities.
In this spirit, in April, 1997 six municipalities locating in the immediate vicinity

in the potential site founded their own Social Control, Information Association, under the TETT acronym. Since its establishing, this Association regularly provides information to the public.

The ways to reach people and engage in communication have been as follows: exhibitions, professional visits, printed and on-line information, cultural and information programs.

Financial assistance is also provided: according to the present legislation (Act on Atomic Energy) the Social Control, Information Association can receive grant from the Central Nuclear Financial Fund. In 2005 the annual subsidy was 183 M HUF (0.7 M Euro).

Seq. No 60	Article Article 32	Ref. in National Report 17

Question / Comment	Hungary is in the investigation phase for a LLW/LILW repository in granite. Please describe any cooperative efforts with other countries to capitalize on their investigations of granite and other host rock formations.
Answer	From the beginning of the siting project, Hungary has striven to capitalize on the experiences of other countries. Exaples include: Finland: Finn Fortum OY. – technical assistance in various subjects, USA: Colorado School of Mines - mining aspects, Golder Associates (Seattle) – safety case, modelling of fractured medium, UK: Golder Associates (Nottingham) - packer testing, Mott Mc Donald – tunnel construction, Germany: Golder Associates GmbH Celle - packer testing, Deutsche Mountain Technik – mining planning, Belgium: Belgatom, SCK•CEN,: Technical support in the selection of a disposal option and candidate disposal site for L/ILW in Hungary. Preliminary safety assessment (1999). The conceptual plan of the repository was made on the basis of information gathered during visits to the sites in Sweden and Finland (in Forsmark, Sweden and Olkiluoto, Finland).

Seq. No 61	Article Article 32	Ref. in National Report 11

Question / Comment	Hungary's Act on Atomic Energy CXVI of 1996 requires involving the public in decision making. Please provide more detail during Hungary's presentation at the May 2006 Review meeting on specific public policy and site selection issues. The program for developing the repository at Bataapati appears to have public support. Please describe the key efforts contributing to acceptance.
Answer	The key feature of the Hungarian L/ILW siting process is voluntary participation of communities. Once the location of the suitable geological objects was known based on a nation-wide sceening, a decision had to be made. There were three independent factors to be taken into account. The first is the geological characteristics, the second is the technical feasibility (site access and constructability) and the third is the public acceptance. The performance of each site could be scored in respect to these factors. The ideal situation would have been if the same site was found the best on the basis of each consideration but this was not the case. Thus the factors had to be weighted and this could not be done on a scientific basis but a political decision was required.

In-situ investigations were to be only started in case of voluntary acceptance by the communities concerned. A letter was sent to each community in the regions concerned to offer them the opportunity of participating in the project. The first letter was only introductory, nothing had to be decided on. Great emphasis was put on explaining to them that the repository unit will only be built in a village where most of the residents agree to it. Those, who formally expressed interest, were involved in the next phase of the project. Information sessions were held, visits have been organised to the nuclear power plant and the existing waste disposal facility to show the residents how the wastes are produced and how they are dealt with. The visitors could also meet the men and women working in these facilities and they could see that they were ordinary people, just like themselves. This experience might be able to turn the mystery that nuclear technology represents to most people into a rational mental image.

The key word is partnership: the local communities must be ensured that there is a long-term commitment to interaction otherwise they might fear that once the repository has been filled up, they will be left to themselves with the wastes.

In 1996 the Hungarian law established the legal basis of providing financial incentives for the supportive group of municipalities. According to the Act on Atomic Energy, in order to regularly provide information to the population of the communities in the vicinity of the facilities, the licensee of a radioactive waste disposal facility shall promote the establishment of a public oversight and information association and can grant assistance to its activities.

In this spirit, in April, 1997 six municipalities locating in the immediate vicinity in the potential site founded their own Social Control, Information Association, under the TETT acronym. Since its establishing, this Association regularly provides information to the public.

The ways to reach people and engage in communication have been as follows: exhibitions, professional visits, printed and on-line information, cultural and information programs.

Financial assistance is also provided: according to the present legislation (Act on Atomic Energy) the Social Control, Information Association can receive grant from the Central Nuclear Financial Fund. In 2005 the annual subsidy was 183 M HUF (0.7 M Euro).

Seq. No 62	Article Article 32	Ref. in National Report 25
Question / Comment	The report mentions that 385 m3 of evaporator bottoms containing “alpha radiant” was produced after the 2003 fuel incident at the Paks NPP and maintained in a special tank separately from other concentrates. Will the planned new repository be able to accept this waste considering the higher alpha concentrations in the waste?	
Answer	This waste could be disposed of in the repository, however until complete removal of the damaged fuel elements, the inventory of alpha-emitting nuclides cannot be accurately determined. Thus, at present it cannot be decided unambiguously, whether all the alpha-emitting waste originating from the accident can be disposed of in the planned new I/LLW repository.	