ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

Consultation on Environmental Impact Assessment Report NPP PAKS II

MINISTERIUM FÜR EIN LEBENSWERTES ÖSTERREICH

enco
Provider of independent Nuclear Safety expertise

ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

IMPLEMENTATION OF NEW NUCLEAR POWER PLANT UNITS AT THE PAKS SITE

Environmental Impact Assessment Report on the proposed activity Consultation Report

ENCO

By Order of the
Federal Ministry of Agriculture, Forestry,
Environment and Water Management,
Project Management Department I/6
"Nuclear Coordination"
GZ BMLFUW.1.1.2/0010-I/6/2015

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EXECUTIVE SUMMARY

There is only one nuclear power plant in Hungary, Paks NPP, consisting in four VVER 440/V-213 pressurized water reactors owned and operated by MVM Paks NPP Ltd. (PA Zrt.). These four units produce around half of the electricity generated in the country. In order to maintain this share, the Energy Policy of the Republic of Hungary provided for the construction of two new reactor units at Paks site.

In conformity with Article 3 of the Espoo Convention and Article 7 of the Directive 2011/92/EU the Republic of Hungary (the competent Hungarian authority is Dél-dunántúli Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (Authority for the Protection of the Environment, Nature and Water Management of South Danubia)) submitted to Austria in March 2013 documents regarding the project "Implementation of new nuclear power plant units at Paks Site".

The Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) replied that the Republic of Austria will take part in the transboundary Environmental Impact Assessment (EIA) procedure, since the proposed project could have significant transboundary impacts.

Within the EIA, a Scoping Report was prepared in order to identify which data the project applicant (MVM Hungarian Electricity Group) needs to present in the next step of the EIA procedure, the Environmental Impact Study (EIS). The Scoping Report was made publicly available in Austria. The comments received from the public were sent to Hungary for further consideration. An Expert Statement to assess the EIA Scoping Report was commissioned by the BMLFUW, in order to evaluate whether the content suggested by the EIA Scoping Report for the EIA is sufficient to determine the safety of the project and the potential risk for Austria. The topics required for the EIS were submitted to Hungary, in order to be considered for the development of the EIS.

Following the Articles 2 and 4 of the Espoo Convention, in April 2015 Hungary submitted the Environmental Impact Study (EIS), which was prepared to identify and evaluate the impact of the planned nuclear power plant technology on the environment. The Study was prepared by MVM ERBE ENERGETIKA Engineering Company Limited and its subcontractors, for the project company MVM Paks II. Zrt.

The Umweltbundesamt (Environment Agency Austria) was commissioned by the BMLFUW to coordinate the preparation of an expert statement on the EIS. The Environment Agency Austria commissioned ENCO to prepare such a statement. The aim of the Expert statement was to assess whether the information presented in the EIS is sufficient to determine potential risks for Austria, as well as to review whether the Austrian comments contained in the "Expert Statement assessing the EIA Scoping Report" have been addressed.

Following the evaluation of the EIS, a number of issues were identified where further discussions and/or clarifications were needed for understanding. In this respect, the Consultation meeting with the participation of Hungarian and Austrian experts was organized in Vienna, Austria, on 24th of September, 2015. All the issues raised were addressed and most (see below) of the specific questions thoroughly answered. The resolution of the issues raised by Austrian experts is documented in the Section 1 of this report. Section 2 presents the conclusions drawn and the recommendations.

While the answers were provided (at least to the extent the data and information were available to Hungarian experts at the time of the Consultation meeting), Austria considers that four of the issues would warrant further clarifications and discussion, either because some of the information was not available at the time of the Consultation Meeting or certain analysis are required to be completed. It is recommended that those are addressed during the future meetings that are regularly held under the "Bilateral Agreement"(BGBl. Nr. 454/1987). Those issues include:

- The results of the PSA, both the CDF and LERF values as well as the severe accident modelling, dominate sequences, etc. are to be presented when those are available;
- The source term for the releases during severe accidents, including the most severe case(s) of containment bypass(es) are to be provided. The results of the dispersion analysis using such a source term and the expected doses in Austria (also considering the ingestion doses, with Austrian food chain characteristics) should be presented;
- The impact on the environment (and, in particular, onto the Austrian territory) in the most critical case when a severe accident affects all of the units at the site and leads to a critical release (i.e. source term from all units simultaneously) from all units should be evaluated and presented;
- The total (maximal) amount of RW and the SF that could be stored at the Paks site in a case of all units at the site being in the operation.

Additionally Austria would like to recommend to Hungary, when imposing its currently-under-development Nuclear Safety Code as the mandatory requirement for the design for Paks II, to require that any severe accident that could lead to releases of a magnitude that could affect Austrian territory is practically excluded already at the design stage. Austria would suggest that the discussion on specific requirements within the Nuclear Safety Code takes place at one of the future meetings held under the Bilateral Agreement.

While the specific questions have been generally answered by Hungary during the Consultation meeting, Austria suggest, because of the specific interest and/or focus but also as some new findings, insights and/or results of analysis will become available, that those are revisited and discussed during future meetings held under the Bilateral Agreement. The issue of interest include:

- The results of the on going analysis of Paks site seismicity including the PSHA;
- The results of the IAEA's review of the emergency plan (EPREV mission);
- The mass/velocity of the aircraft used as the design basis in the estimate of the consequences of the aircraft crash;
- The chosen solution for the alternate heat sink selected for Paks II NPP;
- The radioactivity dispersion/doses tables in section 2.3.5 of the EIS;
- The future operator for Paks II, when such a decision has been taken;
- Types and quantities of RW and SF following severe accidents, once the Preliminary Safety Assessment Report is available.

A difficulty in Austrian experts' assessment is related with the fact that the presentations used during the Consultation meeting were not provided. Although it was indicated that the Hungarian experts' presentations will be handed over this has not happened yet. This limits the Austrian experts' ability to accurately document the resolution on the issues raised.

ZUSAMMENFASSUNG

Derzeit gibt es nur ein Kernkraftwerk in Ungarn, das KKW Paks, bestehend aus vier WWER 440/V-213 Druckwasserreaktoren, im Besitz und betrieben von MVM Paks NPP Ltd. (PA Zrt.). Diese vier Einheiten produzieren rund die Hälfte des im Land erzeugten Stroms. Um diesen Anteil zu halten, sieht die Energiestrategie der Republik Ungarn den Bau von zwei neuen Reaktorblöcken am Standort Paks vor.

In Übereinstimmung mit Artikel 3 der Espoo-Konvention und Artikel 7 der Richtlinie 2011/92/EU hat die Republik Ungarn (die zuständige ungarische Behörde ist Del-dunántúli Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (Aufsichtsbehörde für Umweltschutz, Naturschutz und Wasserwirtschaft Süd-Transdanubien)) im März 2013 Dokumente in Bezug auf das Projekt „Implementierung neuer Kernkraftwerksblöcke am Standort Paks“ an Österreich übermittelt.

Das Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft (BMLFUW) antwortete, dass die Republik Österreich an der grenzüberschreitenden Umweltverträglichkeitsprüfung (UVP) teilnehmen wird, da das vorgeschlagene Projekt erhebliche grenzüberschreitende Auswirkungen haben könnte.

Innerhalb der UVP wurde ein Scoping-Bericht erstellt, um festzulegen, welche Daten der Projektwerber (MVM Ungarische Elektrizitätswerke AG) im nächsten Schritt des UVP-Verfahrens, der Umweltverträglichkeitserklärung (UVE), vorlegen muß. Der Scoping-Bericht wurde in Österreich der Öffentlichkeit zugänglich gemacht. Die eingegangenen Stellungnahmen wurden zur weiteren Behandlung nach Ungarn geschickt. Zusätzlich wurde vom BMLFUW eine Fachstellungnahme zur Überprüfung des UVP Scoping-Berichts in Auftrag gegeben, um zu beurteilen, ob der vom UVP Scoping-Bericht vorgeschlagene Inhalt für die UVP ausreichend ist, um die Sicherheit des Projekts und das potenzielle Risiko für Österreich zu bestimmen. Die für die UVE erforderlichen Themen wurden Ungarn übermittelt, damit diese bei der Erstellung der UVE berücksichtigt werden.

Gemäß den Artikeln 2 und 4 der Espoo-Konvention hat Ungarn im April 2015 die Umweltverträglichkeitserklärung (UVE) übermittelt, die erstellt wurde, um die Auswirkungen der geplanten Kernkraftwerkstechnik auf die Umwelt zu identifizieren und zu bewerten. Die Studie wurde von MVM ERBE ENERGETIKA Engineering Company Limited und ihren Subunternehmern für die Projektgesellschaft MVM Paks II Zrt verfasst.

Das Umweltbundesamt wurde vom BMLFUW beauftragt, die Erstellung einer Fachstellungnahme zur UVE zu koordinieren. Das Umweltbundesamt beauftragte ENCO mit der Erstellung dieser Fachstellungnahme. Das Ziel der Fachstellungnahme war, zu untersuchen, ob die in der UVE vorhandenen Informationen ausreichend sind, die möglichen Risiken für Österreich zu bestimmen, sowie zu prüfen, ob die in der „Fachstellungnahme zum UVP-Scoping-Bericht“ enthaltenen österreichischen Kommentare berücksichtigt wurden.

Im Anschluss an die Überprüfung der UVE wurde eine Reihe von Fragen identifiziert, für deren Verständnis weitere Gespräche und/oder Klarstellungen notwendig waren. In diesem Zusammenhang wurde ein Konsultationstreffen unter Beteiligung der ungarischen und österreichischen ExpertenInnen am 24. Sep-

tember 2015 in Wien organisiert. Alle identifizierten Probleme wurden angesprochen und die meisten (siehe unten) der spezifischen Fragen ausführlich beantwortet. Die Beantwortung der von österreichischen ExpertenInnen aufgeworfenen Fragen wird in Kapitel 1 dieses Berichts dokumentiert. Kapitel 2 enthält die aus den Diskussionen gezogenen Schlussfolgerungen und die Empfehlungen.

Obwohl die Fragen beantwortet wurden (zumindest in dem Umfang, in dem dies den ungarischen ExpertenInnen mit den zum Zeitpunkt des Konsultationstreffens verfügbaren Daten und Informationen möglich war), ist Österreich der Ansicht, dass vier der Fragen weitere Klarstellungen und Diskussion rechtfertigen würden, sei es, weil einige der erforderlichen Informationen zum Zeitpunkt des Konsultationstreffens nicht vorlagen oder bestimmte Analysen erst abgeschlossen werden müssen. Es wird empfohlen, dass diese Fragen im Laufe der nächsten Sitzungen behandelt werden, die unter dem „Bilateralen Abkommen“ (vgl. BGBl. Nr. 454/1987) regelmäßig stattfinden. Diese Fragen sind:

- Die Ergebnisse der PSA, sowohl die CDF und LERF Werte als auch die Modellierung eines schweren Unfalls, dominierende Sequenzen usw., sollten vorgelegt werden, wenn diese zur Verfügung stehen;
- Der Quellterm für die Freisetzungen bei schweren Unfällen, einschließlich des schwersten Falls des Containment Bypasses, sollte zur Verfügung gestellt werden. Die Ergebnisse der Ausbreitungsberechnungen unter Verwendung eines solchen Quellterms und die in Österreich zu erwartenden Dosen (auch für den Ingestionspfad, unter Berücksichtigung der Besonderheiten der österreichischen Nahrungsmittelkette) sollten vorgelegt werden;
- Die Auswirkungen auf die Umwelt (und vor allem auf das österreichische Staatsgebiet) im kritischsten Fall, wenn ein schwerer Unfall alle Einheiten am Standort betrifft und zu einer kritischen Freisetzung aus allen Einheiten führt (d.h. Quellterm aus allen Einheiten gleichzeitig), sollten ausgewertet und dargestellt werden;
- Die Gesamtmenge (Maximalmenge) von RA und AB, die am Standort Paks für den Fall, dass alle Einheiten in Betrieb sind, gelagert werden kann.

Außerdem möchte Österreich der Republik Ungarn empfehlen, in seiner, derzeit in Ausarbeitung befindlichen, Nuklearsicherheitsnorm als zwingende Voraussetzung für die Planung von Paks II festzusetzen, dass jeder schwere Unfall, der zu Freisetzungen in einer Größenordnung führen könnte, die österreichisches Gebiet beeinträchtigen könnte, praktisch bereits in der Planungsphase ausgeschlossen wird. Österreich schlägt vor, dass die Diskussion über die spezifischen Anforderungen in der Nuklearsicherheitsnorm während eines der nächsten Treffen im Rahmen des „Bilateralen Abkommens“ stattfindet.

Obwohl die spezifischen Fragen im Allgemeinen von Ungarn während der Konsultationssitzung beantwortet wurden, schlägt Österreich vor, sowohl aufgrund des besonderen Interesses und/oder Schwerpunkts, aber auch weil neue Erkenntnisse, Einsichten und/oder Analyseergebnisse zur Verfügung stehen werden, dass diese bei künftigen Sitzungen im Rahmen des „Bilateralen Abkommens“ wieder erörtert werden. Die betreffenden Punkte sind:

- Die Ergebnisse der noch laufenden Analyse der Seismizität für den Standort Paks einschließlich der PSHA;
- Die Ergebnisse der IAEA-Überprüfung des Notfallplans (EPREV Mission);
- Die Masse/Geschwindigkeit des Flugzeugs, das als Bemessungsgrundlage in der Abschätzung der Auswirkungen eines Flugzeugabsturzes verwendet wird;
- Die gewählte Lösung für die alternative Wärmesenke für das KKW Paks II;
- Die Tabellen für die Ausbreitung/Dosis von Radioaktivität in Abschnitt 2.3.5 der UVS;
- Der zukünftige Betreiber für Paks II, sobald ein solcher Beschluss gefasst worden ist;
- Art und Menge von RA und AB nach schweren Unfällen, sobald der Vorläufige Sicherheitsbewertungsbericht vorliegt.

Eine Schwierigkeit in der Fachstellungnahme der österreichischen ExpertInnen hängt mit der Tatsache zusammen, dass die während der Konsultationssitzung verwendeten Präsentationen nicht zur Verfügung gestellt wurden. Obwohl darauf hingewiesen wurde, dass die ungarischen Experten die Präsentationen übergeben werden, ist das bis jetzt nicht geschehen. Dies schränkt die Möglichkeiten der österreichischen Experten ein, die Beantwortung der aufgeworfenen Fragen präzise zu dokumentieren.

VEZETŐI ÖSSZEFOGLALÓ

Csak egy atomerőmű van Magyarországon, a Paksi AE, amelynek négy VVER 440/V-213 reaktora van, és a tulajdonosa és üzemeltetője az MVM Paksi Atomerőmű Zrt. (PA Zrt.). Ez a négy blokk biztosítja az ország villamosenegia termelésének kb. felét. Annak érdekében, hogy tartani tudják ezt az arányt, a Magyar Köztársaság Energia Politikája két új atomerőművi blokk építését irányozta elő.

Az Espoo Egyezmény 3. Cikkelyével és a 2011/92/EU Direktíva 7. Cikkelyével összhangban a Magyar Köztársaság (a Dél-dunántúli Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség mint kompetens hatóság) 2013 márciusában benyújtotta Ausztriának az „ Új atomerőművi blokkok telepítése a paksi telephelyen" projekttel kapcsolatos dokumentumokat.

A Mezőgazdasági, Erdészeti, Környezeti és Vizgazdálkodási Szövetségi Minisztérium (BMLFUW) jelezte, hogy az Osztrák Köztársaság részt vesz a határon átívelő Környezeti Hatás Elemzés (KHE) eljárásban, mert a javasolt projektnek lehetnek jelentős határon átívelő hatásai.

A KHE keretén belül kidolgozásra került egy tartalom meghatározó jelentés, amelyben meghatározták, hogy a projekt gazda (MVM Villamos Művek Csoport) milyen adatokat mutasson be a KHE eljárás következő lépésében, a Környezeti Hatástanulmányban (KHT). A tartalom meghatározó jelentést nyilvánosan hozzáférhetővé tették Ausztriában. A lakossági visszajelzéseket továbbküldték Magyaroszrágnak további megfontolásra. A BMLFUW felügyelte azt a Szakértői Értékelést, amely azt értékelte, hogy a KHE tartalom meghatározó jelentés elégséges-e a biztonság és Ausztria potenciális kockázatainak meghatározására. A KHT szükséges témáit elküldték Magyarországnak, hogy azokat a KHT kidolgozása során vegyék figyelembe.

Az Espoo Egyezmény 2. és 3. cikkelyei alapján Magyarország menyújtotta 2015 áprliában a Környezeti Hatástanulmányt, amely a tervezett atomerőművi technológia környezetre gyakorolt hatásait elemezte és mutatta be. A tanulmányt az MVM ERBE ENERGETIKA Mérnökiroda Zrt. és alvállakozói állították össze az MVM Paks II. projekt társaságnak.

Az Umweltbundesamt (Osztrák Környezetvédelmi Ügynökséget) bizta meg a BMLFUW a KHT-vel kapcsolatos Szakértői Értékelés kidolgozásának a koordinálásával. Az Osztrák Környezetvédelmi Ügynökség megbizta az ENCO-t egy ilyen értékelés elvégzésével. A Szakértői Értékelés célja annak az értékelése volt, hogy a KHT által nyújtott információ elégséges-e az Ausztriát érintő potenciális kockázatok meghatározására, továbbá annak a felülvizsgálata, hogy figyelembe vették-e a „KHE tartalom meghatározó jelentés Szakértői Értékelése„ dokumentumban közölt osztrák megjegyzéseket.

A KHT értékelését követően egy sor kérdés merült fel, amelyek megértéséhez további megbeszélésekre és/vagy tisztázására volt szükség. Ennek érdekében Ausztriában Bécsben megrendezték a Konzultációs Értekezletet magyar és osztrák szakértők részvételével 2015 szeptember 24.-én. Az összes felmerült kérdést megtárgyalták, és a legtöbb (lásd lejjebb) speciális kérdést részleteiben megválaszolták. Az osztrák szakértők által feltett kérdések megoldásának dokumentációját a jelen jelentés 1. Fejezete tartalmazza. A 2. Fejetetben találhatók a levont következtetések és javaslatok.

Miközben a kérdésekre a válaszokat megadták (legalábbis amennyire a magyar szakértőknek az információ rendelkezésre állt a Konzutlációs Értekezlet idején), Ausztria szerint négy kérdés további tisztázást és megbeszélést igényel, egyrészt azért, mert valamilyen információ nem állt rendelkezésre a konzultáció idején, másrészt bizonyos elemzéseket még el kell végezni. Javasoljuk, hogy ezeket a kérdéseket a "Kétoldalú Megállapodás" BGBl. Nr. 454/1987 szerinti jövőben rendszeresen megtartott találkozók során tárgyalják meg. Ezek a következők:

- A PSA eredményeket, a CDF és a LERF értékeket, valamint a súlyos baleseti modelleket, domináns eseményláncokat, stb. mutassák be, amint azok rendelkezésre állnak;
- A súlyos baleseti forrástagokat be kell mutatni, beleértve a konténment megkerüléses legsúlyosabb eseteket. Mutassák be a terjedési elemzések eredményeit egy forrástag és az Ausztriában várható dózisok figyelembe vételével (elemezve a lenyelt dózisokat az osztrák élelmiszer lánc jellemzőinek figyelembe vételével);
- Elemezzék és mutassák be a legkritikusabb eset környezeti hatásait (különös tekintettel az osztrák területre vonatkozóan), amelyben a súlyos baleset a telephelyen az összes blokkot érinti és kritikus kibocsátást eredményez (egyidejű forrástagok az összes blokkból);
- A telephelyen tárolt radioaktív hulladék és kiégett üzemanyag teljes (maximális) mennyisége, amikor az összes blokk üzemel a telephelyen.

Ezen kívül Ausztria szeretné javasolni Magyarországnak, hogy amikor a kidolgozás alatt lévő Nukleáris Boztonsági Szabályzat hatályos lesz mint a Paks II kötelező tervezési követelményei, követeljék meg, hogy bármilyen súlyos balesetet, amely az osztrák területet veszélyeztető mértékű kibocsátást eredményez, gyakorlatilag zárják ki már a tervezési fázisban. Ausztria javasolja, hogy a Nukleáris Biztonsági Szabályzat egyes követelményeit beszéljék meg a jövőbeni Kétoldalú Megállapodás szerinti találkozókon.

Miközben az egyes kérdéseket Magyarország általában megválaszolta, Ausztria javasolja, hogy térjenek vissza azokra a jövőbeni Kétoldalú Megállapodás szerinti találkozókon, egyrészt azért, mert speciális érdek fűződik hozzájuk, másrészt rendelkezésre fognak állni új elemzési eredmények, amelyekből eredhetnek új következtetések, megállapítások és megfontolások. Az érdekes kérdések a következők:

- A Paks telephely folyamatban lévő földrengéssel kapcsolatos elemzéseinek az eredményei, beleértve a valószínűségi földrengés veszély elemzését is (PSHA);
- A NAÜ baleset elhárítási intézkedési terv (EPREV) felülvizsgálatának az eredményei;
- A tervezési alapba tartozó repülőgép becsapódás esemény következményeinek elemzéséhez figyelembe vett repülőgép sebessége és tömege
- A Paks II AE számára kiválasztott alternatív hőelnyelő megoldás;
- A KHT 2.3.5 szakasz radioaktív terjedési és dózis táblázatai;
- A Paks II jövőbeni üzemeltetője, amikor az erre vonatkozó döntést meghozzák;
- A radioaktív hulladék és kiégett üzemanyag tipusai és mennyisége, amint az Előzetes Biztonsági Jelentés elérhetővé válik.

Az osztrák szakértők értékelésének nehézségei azzal a ténnyel voltak kapcsolatosak, hogy nem adták át a konzultáció során a prezentációs anyagot. Annak ellenére, hogy jelezték, hogy a magyar szakértők prezentációit át fogják adni, ez eddig nem történt meg. Ez korlátozza az osztrák szakértők lehetőségeit a felmerült problémák megoldásának pontos dokumentálására.

1 ANSWERS PROVIDED TO AUSTRIAN EXPERT OPINION ON ENVIRONMENTAL IMPACT STUDY FOR PAKS II NPP

Under the framework of the Espoo Convention on transboundary environmental impact assessment (UNECE 1991), an assessment of the EIS prepared by the proponent of the project "Implementation of new nuclear power plant units at Paks site" was performed. The purpose of the assessment was to evaluate the adequacy and completeness of the information presented in the EIS, in particular from the point of view of the potential negative impacts onto the Austrian territory. In addition to the assessment of the estimated transboundary radiological impact on Austria, in both normal and accident conditions, the design of the proposed NPP was assessed to verify if it corresponds to the state-of-the-art nuclear technology. The proposed solutions for radioactive waste and spent fuel management were checked for conformity with the good practices and EU requirements (Council Directive 2011/70/Euratom (COUNCIL DIRECTIVE 2011/70/EURATOM). The content of the EIS was verified against the requirements of the EIA Directive (DIRECTIVE 2011/92/EU), as well as the IAEA specific guidelines (IAEA Nuclear Energy Series No. NG-T-3.11 (IAEA 2014). The consideration of the Austrian comments to the EIA Scoping Document, documented in UMWELTBUNDESAMT (2013), was also assessed.

The findings of the assessment of the EIS for Paks II NPP were summarized in the Expert Statement (UMWELTBUNDESAMT 2015) that also identified a number of issues needing further clarification. As such, the Expert Statement was submitted to the Hungarian Espoo contact and the Consultation meeting organized on 24th of September, 2015, in Vienna. During this meeting, all (except 4) Austrian questions were addressed and detailed answers as well as additional information were provided by the Hungarian experts. The clarification by the Hungarian experts during the Consultations as well as the summary of the resolution of Austrian issues are presented in the table below.

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
8.2 Environmental Impact Study			
a) Would it be possible to clarify how it was the selection of the Russian technology and in particular if the environmental impact aspects were considered, as requested by the **DIRECTIVE 2011/92/EU** of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment?	The alternatives to the Paks II development project are not presented in the EIS, neither regarding alternative reactor designs, as contained in the Scoping Report, or regarding non-nuclear alternatives. According to the information given in the EIS Study, from the versions taken into consideration in the Scoping Report, the Russian NPP technology was selected. The Hungarian Government already signed an agreement with the Government of the Russian Federation for the construction of two VVER-1200 units at Paks. There is no indication on the reasons for this selection, as requested by the **EIA Directive (art.5 paragraph 3(d)**). **Article 5** **3**. The information to be provided by the developer in accordance with paragraph 1 shall include at least: (**d**) an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects.	In the preparation for the Paks II project, a total of 5 different reactor types, all of Generation 3, were considered and evaluated in relation to various technical and other parameters. This included the evaluation of the potential and consequences of environmental impact. The results of analyses determined that there are no relevant differences among the types assessed. Therefore the Russian technology was determined to be in no way (as far as the impact on the environment is concerned) inferior to any other technology concerned. Another highly important element of evaluation was the assessment for which of the technologies concerned the financials would be available. The fact that through a direct negotiation Russia offered both the technology and attractive financing led to the decision to select Russian technology.	**Y**
b) Would it be possible to clarify why the bidding procedure was cancelled?		In the preparation of the project Hungary developed a detailed Bid Invitation Specification, to assure that the technology selected will comply with the European Utility Requirements assuring it complies with latest safety standards. As indicated above, the preliminary evaluation of 5 reactors' technologies determined that all of those are fulfilling the standards set by Hungary. The selection of Russia as a supplier country was due to the offer for financing of the project. While the principles and the criteria of the selection were not detailed in the EIAR, those were based on multiple aspects including not only environment (e.g. the temperature of the Danube river) but also economic issues. Nevertheless, it has been confirmed by the Hungarian delegation that all the requirements of the BIS as well as the Hungarian regulatory body will be taken over in the Contract for the supply for Paks II NPP. Consequently, the reactor type selected will meet and exceed the requirements of the EUR document.	**Y**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
c) Would it be possible to clarify how the nuclear safety requirements are going to be implemented during the design, construction and operation of Paks II?	The content of the EIS was found only partially in line with the EIA Directive general requirements and IAEA specific recommendations for the content of EIA reports (**IAEA Nuclear Energy Series No. NG-T-3.11, 2014**) for new NPP.	The Hungarian Nuclear Safety Code (said to be even more stringent than the IAEA requirements) is mandated to be complied with in full. Furthermore the supplier (and all of its sub-suppliers) must comply with the IAEA NG-T03.11. The project team will call upon external experts to verify and assure compliance with said requirements.	**Y**
d) Would it be possible to provide information about the cumulative impact of all nuclear installations existing at the site and planned to be built on the site, not only for normal operation, but also for accident conditions, including the impact of one installation on the others, and the cumulative impact of accidents affecting more than one unit in the same time?		In the design for the new units at Paks, the fact that the site is shared with existing units has been taken into account. Generally, there shall be no impact on the operation of the new units even in a case of severe accidents on the existing units, but also the other way round, new units shall not have an impact on the existing ones. The design basis is that each unit shall be fully capable of managing severe accidents with own "resources". There are no connections or interlinks between safety systems of the new and the existing units. Further possible impact from one to another unit is assessed by the Regulator. The separation of the existing and new units is also legal, with operators being different legal persons. The criteria as well as the assessments to be undertaken during detailed design for the new units has to comply with a much strengthened requirement than for the existing ones. This shows that in the severe accidents with release of radioactivity, the existing units will dominate. Therefore the releases for the existing units are important in the spectrum of releases as presented in the EIAR. Nevertheless, the common operation of all units on the site will exist for a relatively short time. At present, Units 1 and 2 are at the end of their design life, but the extension of the design life for 20 years is ongoing. The same is expected for Units 3 and 4. It is not expected that the units will operate beyond 50 years from their initial commissioning.	**Partially** **The issue of simultaneous releases from all units to be discussed in meeting(s) under the "Bilateral Agreement"**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
		While the initial question was answered and some additional explanations were provided, the Consultant cannot confirm that the radioactivity dispersion analysis undertaken indeed represented the enveloping releases scenario caused by simultaneous severe accidents affecting all units at the site. It is suggested that the issue is additionally discussed within the meetings that are organized within the " Bilateral Agreement" framework.	
e) Would it be possible to provide information about the estimated impact of Paks II on all environment elements in case of beyond design base conditions (severe accident)?		See the discussion in the section 8.4	**Y**
f) Would it be possible to provide information about the preventive and mitigation measures?		The preventive and mitigation measures within the emergency response plan are not described in the EIAR, but nevertheless defined. Moreover, those are going to be assessed and as appropriately modified, to reflect the actual requirements (the modification is to take place as the new units will be put in operation). The preventative and the mitigation measures that are already defined for the existing units at Paks are expected to remain the same for the Emergency plan for the new units. The emergency plan will be evaluated by the IAEA in 2015. (Additional question for one of the future meetings under the "Bilateral Agreement": What is the outcome of the IAEA review of the emergency plan?)	**Y** **The outcome of the IAEA review of the emergency plan should be discussed during one of the future meetings under the "Bilateral Agreement".**
g) Would it be possible to clarify why the 30 km radius for the general survey area was selected and what is the purpose of the "deliveries area" indicated in Table 1.3.2-2 (section 1.3.2.3) of EIS?		The 30 km radius within which the measures (including survey) are to be implemented is based on a Governmental decision, and it reflects the expected impact area in a case of radiological release.	**Y**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
		The "Delivery area" is something else, and it is related with the environmental impact (e.g. increased traffic, etc.) on an area that is expected to be affected during the construction phase. The assessment of the environmental impact has been limited to this area. This "Delivery area" has nothing to do with the emergency preparedness.	
h) Would it be possible to clarify why the radiological impact on the workers was not estimated?	It is suggested to address also the following issues, although they are not important from a transboundary point of view:	The radiation doses for the workers were not assessed in the EIAR (although, per EIR standard, those need to be) but rather in an another special assessment. In accordance with the regulation regarding occupational exposure, those are monitored and reported on a yearly basis. The Hungarian limit is 18 mSv/yr, as a maximum for radiation workers (which is lower than ICRP recommendation of 20 mSv/yr). For the existing units the assessment of the operation doses exists, but not yet for the new units.	**Y**
i) Would it be possible to clarify why the impacts on soil, landscape, cultural values and traffic were not estimated?		The scope of EIAR (in the areas of impact on soil, landscape, etc.) is in accordance with the Hungarian national legislation relevant for the EIA. In terms of archaeological findings, the assessment has been undertaken, and the results are publicly available. Before the construction of new units, additional archaeological assessment will be undertaken.	**Y**
j) Would it be possible to clarify who will be the future operator of Paks II?	The description of the environmental radioactivity monitoring performed by Paks NPP was found fully in line with the relevant international standards and recommendations and in full compliance with the EC requirements and recommendations. The doses to the members of the critical group due to the operation of Paks NPP reported in the EIS were found in compliance with the doses calculated by EC based on the radioactive discharge data reported by Paks NPP. Also, following the verification performed in 2004 EC concluded that "the facilities necessary to carry	The Hungarian experts indicated that at present it is not possible to define the future operator of Paks II. Nevertheless, there are a very clear and strict requirement that it shall be a highly competent organisation. It might be expected that the operator of Paks I will operate Paks II as well. (Additional question for one of the future meetings under the "Bilateral Agreement": Clarification as to who will be the operator for Paks II.)	**Y** **The question who will be the operator for Paks II should be clarified during one of the future meetings under the "Bilateral Agree-**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
	out continuous monitoring of levels of radioactivity in the air, water and soil around the Paks site are adequate". Having in mind that the most significant impact that a NPP might have on the environment is the radiological one, and this is usually quantified through monitoring the radioactivity levels in environmental samples, based on these findings it can be stated that, **if Paks II will be operated by Paks NPP operator**, there are reasons to believe that the new plant will be operated safely.		**ment".**
k) In addition to this, it is suggested to correct the 90 Sv value of the dose constraint indicated in section 4.4.2.3 (page 97) of EIS.		A typing mistake that does not occur in Hungarian text.	**Y**
8.3 Consideration of Austrian comments to EIA Scoping Document			
a) Would it be possible to provide information about the reference plant and its certification?	The findings of the evaluation of the EIS show that: 3 direct answers were provided in the International Chapter 18 of them were considered by including the requested information in EIS. 7 questions were not considered another 7 are not applicable anymore (since part of them were related with the selection of the reactor type which was already done the rest were related with the costs which are not considered in EIS, as it is clearly stated in section 1.3.2.3). 2 questions were only partially answered. From the questions not considered, or inadequately/incompletely answered, the following ones should be followed up during the bilateral consultations:	The reference plant for Paks II will be Leningrad II NPP that is currently in construction. Nevertheless, Paks II will not be built as a replica of Leningrad II, rather it will have to fulfil Hungarian (additional) requirements, including e.g. much stronger requirements for the aircraft impact, spatial separation of emergency DGs, but also some other requirements of technical or operational nature, including an enhanced turbine with lower operating costs, etc. There is a total of about 11000 special requirements that the supplier needs to fulfil for Paks II, and many of those are more strict than for Leningrad II. Nevertheless the basic concept will remain the same as for Leningrad plant. The Hungarian requirement is that the reference plant is either in operation or in construction (meaning licenced in the country of origin) and therefore the newest design of Russian reactor called TOI has not been taken as a reference (TOI is an evolution of the Leningrad II design). Austrian experts asked why the Leningrad II and not Novovoronezh V (which has a higher seismic resistance and therefore is used as reference plant in Akkuyu in Turkey) was selected as reference plant for Paks II. The Hungarian experts clarified that	**Y** **The mass/velocity of the aircraft used as the design basis should be clarified during one of the future meetings under the "Bilateral Agreement"**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
		the question of the reference plant is not that relevant, as any plant to be constructed needs to fulfil special Hungarian requirements. In terms of the design basis for the aircraft crash, Hungarian experts clarified that both a military aircraft (being of lower mass but having higher velocity) and large commercial airliner (having large mass and lower speed) are considered. Nevertheless Hungarian experts said that they are not authorised to release the type(s) and technical details of aircraft that were used for the design basis due to " security consideration". The Hungarian experts referred to the " Finnish practice", where none of the security-relevant information is disclosed. Upon pointed question whether it was indeed a large commercial aircraft, or at least one that is comparable as those in the Finnish regulation, Hungary did not provide the answer. (Additional question for one of the future meetings under the "Bilateral Agreement": Clarification of the mass/velocity of the aircraft used as the design basis)	
b) Would it be possible to provide a detailed description of the measures for control of severe accidents and the mitigation of accident consequences?		The measures are as described in the answer 8.2 f), which is a fairly standard set of measures	**Y**
c) Would it be possible to provide, if available, the results of PSA?		To develop the plant specific PSA, there is a need for specific site related data to become available. As those data were not yet provided to the Russian designer, the results of the PSA are for a generic design of the reference plant. The CDF in the current version of the PSA is 7.37*E-7. Nevertheless the Hungarian regulation defines the safety goals to be confirmed with a PSA. The values for the safety goals are: 1.0E-5/a for the core melt	**Partially** **To be followed-up during the next meeting(s) under the "Bilateral Agreement"**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
		1.0E-6/a for the large release 1.0E-7/a for the total loss of heat sink The PSA study developed for Paks II by the Russian designer and it is expected to be available in May 2016. It will then be reviewed by Hungarian experts. This date is relevant because the PSA is required for the initiation of the licensing process. It is planned that the construction license will be issued before end of 2017. As the maximum regulatory review process is 12 + 3 months, that means that by September 2016 all necessary documents need to be completed and handed over to the regulator. That will include the PSA as well as the SAR. The issue of the PSA and its results reflecting the exact design and Paks site data will be revisited during the next meeting(s) under the “Bilateral Agreement”.	
d) Would it be possible to provide information about the status of implementation of stress test recommendations for Paks II?		The information on the measures planned and (to be) implemented as identified during the analysis within the Stress tests for the Leningrad II type NPP are available. Some of the specific requirements from the Stress test are also integrated in the new Hungarian Safety Code, thus mandatory for Paks II. The Hungarian safety code also integrates the WENRA reference levels for new NPPs. Both are a part of previously mentioned 11.000 requirements of the Hungarian safety code. Some of the examples of Stress test measures include special review of the heat sink, additional Diesel Generators (including those to support filing the water tanks), the spatial separation of , to be dispersed throughout the plant site, etc.	**Y**

Umweltbundesamt REP-0533	Background	Replies during Paks II Consultation	Resolved?
8.4 Nuclear safety aspects			
Selected nuclear technology			
a) Would it be possible to clarify why the emergency heat removal spray pools (which are a specific safety feature of the selected technology) do not appear in the design described in Chapter 6 of EIS?	The project developer claims that the selected technology corresponds to the requirements of a Generation 3+ state-of-the-art NPP design. However, one of the specific safety features of the selected units (namely, the emergency heat removal spray pools) does not appear to be included in Chapter 6 of the EIS.	The emergency heat removal via the spray pools are one of possible variants for the alternate ultimate heat sink, when Danube water cooling is lost. There might be other variants, including e.g. small cooling tower with a DG-powered pumps. The final decision on the alternate heat sink has not been taken yet. The final decision will be taken in the design phase, when all other elements are developed. Nevertheless, the current expectation is that the cooling towers are more likely than the spray ponds. In summary the hierarchy of ultimate heat sink is Water from Danube cooling channel Emergency cooling system taking water directly from Danube. Additional water sources on/close to the site like water wells, ponds, tanks for the cases that Danube water disappears. (Additional discussion for one of the future meetings under the “Bilateral Agreement”: The solution for the alternate heat sink selected for Paks II NPP)	**Y** **The solution for the alternate heat sink selected for Paks II NPP should be further discussed in one of the future meetings under the “Bilateral Agreement”**
Transboundary impact			
b) Would it be possible to provide more information and, if available, documented proofs of the validation of TREX (Euler-model) code used for modelling the dispersion of accidental airborne releases?	The transboundary impact assessment presented in the International Chapter was found **incomplete**. In case of incidents or accidents occurring at Paks site, the Austrian state territory could be affected as a result of an airborne release of radioactive substances. Therefore, a detailed identifi	The information on the TREX code was provided. TREX has been developed in Hungary and it is, since years, used in Paks NPP including the preparation the yearly reports on the environmental impact. The code has been validated and all evaluation documentation is available with the developer. In 2008 the TREX code has been compared with RODOS and SINAS in an IAEA study.	**Y**

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c) Would it be possible to clarify the information presented in Tables 2 and 3 (columns “1 day”, “10 day”, “30 days” for DEC1 and respectively “0–1 days”, “1–7 days”, “7–30 days” for DEC2) in section 2.3.5 of the International Chapter?		The information in the Tables as quoted were clarified in the presentation. With information provided the tables are clear and obvious. However, the presentation, although promised, has not been provided to the Austrian experts, so no further verification was possible. (Additional discussion for one of the future meetings under the “Bilateral Agreement”: Provision of the presentation clarifying the content of the radioactivity dispersion/doses tables in section 2.3.5).	**Y** **Presentation clarifying the content of the radioactivity dispersion/doses tables in section 2.3.5 should be provided during one of the future meetings under the “Bilateral Agreement”**
d) Would it be possible to provide the total doses and the doses calculated on all exposure pathways due to airborne releases in case of beyond design basis accidents (DEC1 and DEC2)? **NOTE**: DEC1 (TAK1): Beyond Design Basis Accident DEC2 (TAK2): Serious accident (term used in the EIS)		Extensive information has been provided by Hungarian experts, including a detailed information on the dispersion calculation, results of which were presented as a map but also with special values for a number of locations in Austria (and all other Hungarian neighbouring countries). The dispersion calculation were undertaken for two scenarios (and relevant source term): the BDBA (DEC 1) and Serious accident (DEC 2). The doses were estimated across the whole food chain. The calculation shows that the maximum doses in any neighbouring countries will not exceed 10 µSv, taking into the account the inhalation doses as well as the ingestion doses. The Hungarian experts clarified that the committed doses were calculated with integration periods of 50 years for adults and 70 years for children. Further, the Hungarian experts explained that the inhalation doses, in particular due to I-131, are very high initially and then dropping down 20 fold. The calculated doses of 56/34 nSv (DEC1 children/adults) are lower than the levels where protective measures would be needed. The integration over the longer period for the DEC 1,	**Partially** **To be followed-up during the meetings under the “Bilateral Agreement”**

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		also taking into account other pathways, results in negligible doses. For the DEC 2 the calculated doses are 3.2/3.6 µSv (for children/adults) for the inhalation and 1.9/4.9 µSv (children/adults) for the ingestion. The total dose for the city of Vienna is less than 10 µSV. Upon Austrian question, Hungarian experts clarified that the model for the dispersion used in the calculation is the Hungarian one (contained in the TREX code), while the food chain model is the one recommended by the IAEA. Austrian experts indicated that the IAEA model might not be appropriate for the food habits of Austrian population, though it is obvious that the doses with Austrian own food habits would not change dramatically. As for the meteorological data, the calculation of doses for all of the locations in the neighbouring countries was done using the actual weather data for the whole year of 2011 (actual day-to-day data with 3 hours intervals interpolation). Hungarians can be commended for undertaking such detailed analysis, which is much more effort-intensive that taking some average values, although it has to be noted that a possibility of a worst case weather conditions that would e.g. affect Austria alone, would not necessarily be enveloped by the analysis undertaken. The dispersion analysis undertaken considered the release happening on EVERY day of 2011, the release height of 35 and 100 meters in the actual weather conditions for that day, and then calculation of dispersion and resulting doses for the consecutive 30 days period. The resulting calculation determined the highest value for each of the locations selected. It was not clear on which basis was this selection of the locations in Austria made. The dispersion calculation has been made in geo-	

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		graphical “blocks” with dimension 10 x 10 km, and in 34 horizontal plan (up to 3000 meters). This is a very detailed presentation that requires extensive calculation efforts. Austrian experts inquired whether the TREX code (which is in use at Paks for quite long time) has been validated with the 2003 iodine release from the spent fuel pool at Paks Unit 2. The answer was that it was not, as the weather data from 2003 would not be available. Nevertheless, the TREX model has been checked against the Iodine release from the Hungarian academy of science institute in 2011 . The presentation of the results in the table contained in the EIA report is causing some confusion. Hungarian experts explained that the terms “early “ and “late” shall not be associated with the releases, rather with the way the doses are calculated. The table entries for “early” are in fact considering only the inhalation doses, while the entries for “late” considers all of the exposure pathways. While the Austrian experts recognises that the dispersion calculations required lots of efforts and that Hungarian experts did not spare resources in undertaking those (although taking the weather data for each day of a whole year might not provide the most conservative doses for the Austrian population), the actual doses are nevertheless highly impacted by the source term used for DEC 1 and DEC 2. Hungarian experts explained that the values used are provided by the Russian designer (though those are slightly different than those used in e.g. EIA for Baltic NPP). Hungarian experts clarified that the percentage of the inventory released for the worst case scenario is about 0.05 % of Cs of the core inventory. The Austrian experts felt that with the absence of detailed scenarios it is difficult to clarify whether the source term used is indeed the most criti-	

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		cal (conservative) one, and worth the possible scenarios e.g. containment bypass, that would lead to most severe environmental impact where indeed taken into the account. While it is fully recognised that Hungarian experts devoted lot of efforts to explain all the details and answer the questions posed by Austria, the importance of this topic, which is arguably the most important one for Austria, warrants that it is further addressed during the forthcoming meetings under the "Bilateral Agreement". In particular the worst case severe accident scenarios leading to early releases, the sources terms associated with each of the scenarios and the sensitivity analyses using the most critical weather conditions for Austria (e.g. a direct air circulation towards Austrian territory) and the resulting doses for Austrian population will need to be addressed.	
e) Would it be possible to clarify if the revision of the Hungarian NSR will imply the modification of the requirement to analyse only design base accidents for the purposes of environmental impact assessment in accident conditions?		Hungary clarified that with the new Annex 3a of the Nuclear Safety Code all sequences including severe accidents are to be analysed.	**Y**
8.5 Radioactive waste and spent fuel			
a) Would it be possible to clarify if a national strategy and/or program for the management of RW and SF do exist in Hungary, according to the **Council Directive 2011/70/EURATOM** establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste?	The activities foreseen for the management of RW and SF at Paks II are generally in line with the international standards and practices. The impact of RW and SF generation and in particular of the planned management operations to be performed at Paks II are insufficiently analysed.	Hungary developed the national RW and SF strategy as required by the Council Directive 2011/70. The Strategy has been submitted to the EC and it is now being evaluated.	**Y**

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b) Would it be possible to clarify who is the owner of the prime responsibility for the safe management of RW and SF according to the Hungarian legislation?		In accordance with Hungarian legislation the owner of the RW and SF has the primary responsibility for treatment and disposal. Nevertheless the ultimate responsibility is with the Hungarian state. The centralised organisation for the Management of RW will also be responsible for treatment and disposals of the RW generated by Paks II.	**Y**
c) Would it be possible to provide information about the estimated impact of already existing RW and SF stored on Paks NPP site during the construction of Paks II?		The analysis of the impact of RW and SF at the site during the construction of Paks II has not been made. It is believed that impact is negligible, due to the size of the site.	**Y**
d) Would it be possible to provide the total estimated quantities of RW and SF at the site (when all units will be in operation) and the existing quantities on Paks NPP site?		The total quantities of RW and SF at the site are estimated. As far as the SF is concerned, the total storage capacity of the spent fuel elements is for Paks II: 6.270 elements (3.300 t) and for Paks I: 17.760 elements (3.900 t). This is approximately the capacity needed to cover 10 years of operation of each of the NPPs (all units). For both Paks I and Paks II there is still a possibility to transport the SF elements back to Russia. Generally it is not planned to store any large quantities of RW at the site. The low and intermediate level RW will be continuously transported to the processing and disposal site so that only limited amount of waste will be present at the Paks I site. While the question was answered, it is felt that the explanation was not precise enough. Therefore the issue of the RW and SF (including the amounts stored in the intermediate storage facility) should be addressed during the future meetings under the “Bilateral Agreement”.	**Partially** **To be followed-up during the meetings under the “Bilateral Agreement”**
e) Would it be possible to clarify how it will be ensured the removal of residual heat from the High Level Waste (other than Spent Fuel) planned to be stored inside the Auxiliary Building?		Hungary clarified that the “high level waste” as called in the EIS is not the high level waste from reprocessing, rather than the operational waste. Therefore the heat removal from that waste is not an issue.	**Y**

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f) Would it be possible to provide the doses to the workers and members of the public due to RW and SF management operations planned to be performed at Paks II calculated with the quantities and characteristics of the RW and SF which will be generated by Paks II?		The doses to the personnel from handling of RW and SF are included in the overall operational doses and could not be separated. The doses to the personnel are controlled and shall be well within the international prescribed limits. The doses to the population from the RW and SF management operations are only those that are related to the offsite transport. Hungarian experts confirmed that those doses are negligible.	**Y**
g) Would it be possible to provide the types and quantities of RW and SF following severe accidents (and not only design-basis accidents)?		According to the Hungarian legislation (Annex 1 to Govt. Decree 118/2011, 1.2.3.0280, ke) the types and quantities of RW and SF have to be specified at a later phase of the licencing process, during the construction licence application, in the Preliminary Safety Analysis Report (PSAR). Following severe accidents no additional SF will be produced, thus in case of severe accidents the amount of SF is given as the quantity stored inside the containment in case of normal operational conditions. (Additional discussion for one of the future meetings under the "Bilateral Agreement": Provision of the types and quantities of RA and SF for severe accidents after availability of the PSAR).	**Y** **This question to be discussed in meeting(s) under the "Bilateral Agreement" once the Preliminary Safety Analysis Report is available**
h) Would it be possible to provide the estimated impact of accidents affecting the RW and in particular SF management facilities to be established on Paks II?		According to the Hungarian experts the SF pool is located inside the containment building. The design basis of the new units covers the accidents related to the management of the spent fuel assemblies. The emissions which occur in case of DBC4 accidents (design-based failure; presented in Chapter 20 of the EIA) cover the accidents related to fuel management. The interim storage facility of the SF may be built as an independent facility. According to the Hungarian legislation the environmental impacts of this new facility have to be determined in a separate EIA Study in a separate procedure. Thus the requested information will be available in the documentation of the separate environmental licensing procedure of the new interim	**Y**

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		storage facility. The licensing process of this facility will comply with both the European as well as the international obligations. Regarding to the limitation of the environmental impacts of the accidents: All the legal and technical requirements related to the nuclear emergency preparedness are defined in the National Nuclear Emergency Preparedness and Response Plan. These are supplemented by the internal regulatory documents of the contributor bodies. The Emergency Preparedness and Response Plan has to be issued by the Developer in the commissioning licensing process in order to have it approved by the nuclear safety authority.	
i) Would it be possible to clarify the information given in section 8.1.2.1.5 of EIS in relation with the temporary storage of spent fuel on site for several decades “perhaps even beyond the plant’s operation time” which contradicts the information given in Chapter 19?		Hungary does not see a contradiction between the information given in Section 8.1.2.1.5 of EIS and the information given in Chapter 19. They explain that the quoted phrase “perhaps even beyond the plant’s operation time” means that at the end of the lifetime of the NPP the SF has to be removed from the reactor and to be stored at the spent fuel pool until the properties of the SF meet the removal requirements. Before the final disposal of the SF, onsite interim storage might be necessary.	**Y**
j) In addition to these, it is suggested to replace all the references to the IAEA Safety Series No.115 in Chapter 19 with references to Directive 96/29/Euratom and to correct the information relative to international and EU legislation given in section 19.1 of EIS.		Hungary disagrees, because the suggested Directive 96/29/EURATOM will be overruled according to Article 107 of the Directive 2013/59/EURATOM at 8th of February 2018. They further explain that the implementation of the EURATOM Directives and IAEA Safety Series are described in the Chapters 19.1 and 19.2 of the EIA.	**Y**

2 CONCLUSIONS AND RECOMMENDATIONS

The Consultation meeting with the participation of representatives of Hungary and Austria but also the expert teams on both sides was held in a highly constructive atmosphere. All of the questions raised were addressed (with the exception of 3 where the answers were promised to be provided in writing), with additional explanations provided on clarifying questions raised during the Consultations. The Consultations also followed up on the information provided during the Public hearing held a day before. This allowed Austrian experts to clarify the analysis undertaken for and statements provided within the EIA report. Further it allowed Austrian experts to obtain more thorough views on the environmental impact from Paks II NPP, including those of special interest to Austria, which are the effect on Austrian territory from possible releases from Paks II in particular in a case of severe accidents.

Most of the questions raised were answered during the Consultation meeting. There were 4 questions, mainly related with the RW and SF, that were not answered during the Consultation meeting due to the shortage of time. The answers to those have been provided in the meantime, and referred to in this Report.

The questions that are of relevance for Austria include the results of the PSA study for Paks II, the radiological impact on Austrian territory caused by severe accidents at Paks II but also possible accidents affecting all the units at the site, and the total quantities of RW and SF on Paks site with all Paks I and Paks II units in operation. It is proposed that all of those are addressed during the regular meetings (i.e. at the time when the information become available) under the "Bilateral Agreement".

For the first one, the Hungarian experts noted that currently no PSA for the Paks II plant is available. The PSA is planned to be delivered by the Russian designer in 2016. After that the PSA will be reviewed by Hungarian specialist and adjusted for the Paks II site specific conditions. Austria is interested in obtaining the result of the PSA, the CDF and LERF values but also the descriptions of the dominant severe accident sequences and other information as appropriate.

The second question is related with the doses from all exposure pathways due to airborne releases during the BDBA (DEC1 and DEC2). While Hungary provided extensive information and clarification, the issue of the source term used being (possibly) not the most critical one and the weather conditions used in the dispersion calculation not being the most severe ones warrant additional scrutiny. Further it was not clear whether the DEC 2 sequence is the most conservative one in terms of a potential for radioactive release, i.e. whether a higher source term could be generated in a specific sequence, like a containment bypass.

The third question, likely the most critical one for Austria, is a possible (Fukushima like) scenario where all of the units operating at the Paks site (the existing 4 and the 2 new units) are simultaneously involved in an accident. The interest of the radiological impact on the Austrian territory and resulting doses to the population is of interest.

The last question is related with the total (maximal) amount of RW and the SF that could be stored at the Paks site in a case of all units operating. The Hungarian experts could not immediately provide a detailed information on this subject.

In the discussion on the "Reference plant" for the Paks II, Hungary stated that the Novovoronez Phase 2 design is the reference, however, many design changes are expected to be introduced. Those are to fulfil the requirements of the (new) Hungarian Nuclear Safety code, which is now under the development. The requirements of the Safety Code will be mandatory for the designer, thus assuring that the safety of Paks II is even higher than of its reference plant. Austria is recommending that in its finalisation of the Nuclear Safety Code, Hungary establishes a firm requirement that any severe accident that could lead to releases of a magnitude that could affect Austrian territory is practically excluded. Austria would like to discuss that specific requirement and its formulation at one of the future meetings held under the "Bilateral Agreement".

While the issues of interest have been discussed and Austrian questions answered (generally, e.g. the question on the weight/velocity of the aircraft to analyse the impact of an aircraft crash was not), several of those remain of interest. In some cases the analysis is ongoing (e.g. seismic assessment and the PSHA) on others, the decision on how to proceed (e.g. future operator of Paks II) or the design solution (e.g. ultimate heat sink) has not been selected yet. Therefore Austria suggest that the issues as listed below are revisited and discussed during future meetings held under the "Bilateral Agreement".

- The results of the ongoing analysis of Paks site seismicity including the PSHA;
- The results of the IAEA's review of the emergency plan (EPREV mission);
- The mass/velocity of the aircraft used as the design basis in the estimate of the consequences of the aircraft crash;
- The chosen solution for the alternate heat sink selected for Paks II NPP;
- The radioactivity dispersion/doses tables in section 2.3.5 of the EIS;
- The future operator for Paks II, when such a decision has been taken;
- Types and quantities of RW and SF following severe accidents, once the PSAR is available.

Although agreed during the Consultation meeting, Hungary did not provide the transparencies used to clarify the issues that were of Austrian interest. This limited the Austrian experts' ability to comprehensively document the resolution of the issues and in some cases prevented the corroboration of the statements made. Therefore the resolution as documented in the table above is solely based on the notes made by Austrian experts as well as on the recordings of the discussion during the meetings. Because of that, as such there might be some mistakes in the resolution as documented.

3 LIST OF ABBREVIATIONS

AB ..... Abgebrannter Brennstoff

BDBA ..... Beyond Design-Basis Accident

BMLFUW ..... Federal Ministry of Agriculture, Forestry, Environment and Water Management of Austria

BDBA ..... Beyond Design Basis Accident

CDF ..... Core Damage Frequency

DBA ..... Design-Basis Accident

EIS ..... Environmental Impact Study

EPREV ..... Emergency Preparedness Review

EU ..... European Union

EUR ..... European Utility Requirements

IAEA ..... International Atomic Energy Agency

LERF ..... Large Early Release Frequency

LILW ..... Low and Intermediate Level Waste

LRF ..... Large Release Fraction

PSA ..... Probabilistic Safety Analysis

PSAR ..... Preliminary Safety Assessment Report

PSHA ..... Probabilistic Seismic Hazard Analysis

NPP ..... Nuclear Power Plant

RA ..... Radioaktiver Abfall

RW ..... Radioactive Waste

SF ..... Spent Fuel

WENRA ..... Western European Nuclear Regulators Association

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