

**Project Fiche No. 5**

**Stabilization of Spent Nuclear Fuel Storage Pool at the Vinča Site in Serbia**

**1. Basic information**

- 1.1 CRIS Number:** 2010/022-503  
**1.2 Title:** Stabilization of Spent Nuclear Fuel Storage Pool at the Vinča Site in Serbia  
**1.3 ELARG Statistical code:** 03.64 - Nuclear safety  
**1.4 Location:** PC Nuclear Facilities of Serbia, Vinča/Belgrade, Serbia

**Implementing arrangements:**

**1.5 Contracting Authority:**

The European Union represented by the European Commission for and on behalf of Serbia in joint management with the International Atomic Energy Agency (IAEA).

**1.6 Implementing Agency**

The International Atomic Energy Agency (IAEA), Technical Co-operation Department.

**1.7 Beneficiary:**

The Republic of Serbia  
PC Nuclear Facilities of Serbia  
Vinča, Belgrade, Serbia  
Radojica Pešić, Director General

**Financing:**

**1.8 Overall cost (VAT excluded)<sup>1</sup>:** EUR 3 150 000

**1.9 EU contribution:** EUR 3 000 000

**1.10 Final date for contracting:** 2 years following the date of conclusion of the financing agreement

**1.11 Final date for execution of contracts:** 2 years following the end date for contracting

**1.12 Final date for disbursements:** 1 year following the end date for execution of contracts

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<sup>1</sup> The total cost of the project should be net of VAT and/or other taxes. Should this not be the case, the amount of VAT and the reasons why it should be considered eligible should be clearly indicated

## 2. Overall Objective and Project Purpose

### 2.1 Overall Objective:

To improve radiological safety by stabilizing the spent nuclear fuel pool after removal of the SNF at the Vinča Institute and bringing it in line with best EU radiation control practices.

### 2.2 Project purpose:

To contribute to the implementation of the VIND Programme through the stabilization of the radiological conditions in the spent fuel storage building, pool and transfer canal following return of all spent nuclear fuel to the Russian Federation, which is the country of origin.

### 2.3 Link with AP/NPAA/EP/SAA

Article 110 of the SAA with the Republic of Serbia explicitly mentions nuclear safety as one of the cooperation topics.

As a short term priority for Serbia mentioned in Annex 2 of European Partnership with Serbia, the continuation of dismantling of the Vinca research reactor is stated.

The Serbia 2009 progress report mentions that "Serbia has made good progress in the areas of **nuclear safety and radiation protection**. The Law on Ionising Radiation Protection and Nuclear Safety Waste was adopted in May 2009. The provisions of the Law stipulate the next establishment of a nuclear regulatory agency. This agency is expected to be fully operational during the first half of 2010. Decommissioning of the Vinča RA research reactor, preparation for the repatriation of spent nuclear fuel to the Russian Federation, and management of radioactive waste on-site are progressing well. All the decommissioning activities at Vinča are now being performed under a new Public Company for Nuclear Facilities of Serbia.

Serbia has not ratified the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Nevertheless, significant progress has been achieved.

However, considerable efforts still need to be made in order to align nuclear safety and radiation protection with the *acquis* and best EU practices".

### 2.4 Link with MIPD

The IPA Multi-beneficiary Multi-annual indicative Planning Document (MIPD) 2009-2011<sup>2</sup>, *section 2.3.3.11 - Nuclear Safety and Radiation Protection*, mentions that "in Serbia [...], the operation, refurbishment and dismantling of nuclear research reactors constitute additional sources of radiation risks that would require investment, in particular for the management of spent nuclear fuel and radioactive waste".

### 2.5 Link with National/Sectoral Investment Plan

- Decision of the Serbian government to decommission the RA research reactor located at the Vinča Institute and approval of the VIND programme (2002 and 2004).
- Serbian Law on ionising radiation protection and on nuclear safety (2009).

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<sup>2</sup> C(2009)4518, 16.06.2009

- Activity framework in the field of nuclear safety and radiation protection for the period 2008-2010 decided by the government of Serbia.

### 3. Description of project

#### 3.1 Background and justification:

Operation of the RA nuclear research reactor at Vinča until 1983 has generated spent nuclear fuel and many types of radioactive waste that need to be properly managed. This is the main aim of the VIND programme that was established in 2002 based on a decision of the Serbian government to decommission the Vinča RA research reactor. The VIND programme comprises a number of successive phases of implementation that are covering the period 2006-2013 (see hereafter).

- Phase 1: Removal, characterisation and repackaging of spent nuclear fuel in store at the Vinča Institute (IAEA and other donors funding; IPA funding);
- Phase 2: Preparations for and transport of Russian-origin spent nuclear fuel from the Vinča Institute to the Russian Federation (IPA funding);
- Phase 3: Reprocessing and disposal of the Russian-origin spent nuclear fuel in the Russian Federation (IAEA and other donors funding);
- Phase 4: Design and construction of a waste processing and storage facility at the Vinča Institute for all types of radioactive waste to be generated during decommissioning operations of the RA nuclear research reactor (IAEA and other donors funding);
- Phase 5: Provisions of equipment for a waste processing facility at the Vinča Institute (IPA funding);
- Phase 6: Conditioning, packaging and storage of disused sealed radioactive sources (IAEA and other donors funding, IPA funding);
- Phase 7: Conditioning and processing of improperly stored and unconditioned radioactive waste (IAEA and other donors funding, IPA funding);
- Phase 8: Decommissioning of the old storage facilities for sources and radioactive waste (IAEA and other donors funding, IPA funding);
- Phase 9: Dismantling of the old piping system and tanks containing radioactive liquid waste (IPA funding);
- Phase 10: Radioactivity survey of the Vinča site (IPA funding);
- Phase 11: Implementation of recommendations and priorities from Phase 10, site-wide radiation survey (IPA funding);
- Phase 12: Stabilization of spent nuclear fuel storage pool and decontamination of storage spent fuel room;
- Phase 13: Registry of radioactive sources, wastes and exposures;
- Phase 14: Part 2 of conditioning, packaging and storage of disused sealed radioactive sources;
- Phase 15: Decontamination and decommissioning of the RA research reactor hot cells;
- Phase 16: Other incremental decommissioning projects.

Management of spent nuclear fuel is considered as the most urgent problem to be solved and therefore the three first phases of the VIND programme addressed the characterisation, repackaging, transport to the Russian Federation and reprocessing operations. It is important to note that phase 2 (preparation for transport of spent nuclear fuel to the Russian Federation)

will be funded by the 2007 IPA horizontal programme on nuclear safety and radiation protection.

Management of radioactive waste to be generated during the decommissioning and dismantling of the RA research reactor constitutes also an important radiological issue and phases 4 and 5 of the VIND programme are devoted to the transformation of an existing building into a waste treatment and conditioning facility. Funding of most of the equipment to be installed in this facility was also part of the 2007 IPA horizontal programme on nuclear safety and radiation protection.

Several donor countries (e.g. the USA, Czech Republic, and Slovenia) have already contributed to these activities, as well as the IAEA and the EU. However the funds that are expected to be contributed are still far from the needs already identified.

Therefore the aim of this project is to contribute to the VIND programme via the support to stabilization of the spent nuclear fuel pool after removal of the SNF at the Vinča site.

From the radiological point of view, this phase proves to be quite important since the spent fuel pool contains long-lived radioactive liquid transuranic waste, as well as high concentrations of other fission products and corrosion products. A reasonable potential exists for future leakage, potentially resulting in a dramatic radioactive contamination of the underground aquifer and the water table.

### **3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact**

The project will reduce the risks of leakage and migration of radioactive contaminants into the environment, since radioactive liquid waste in the spent nuclear fuel storage pool at the Vinča Institute will be eliminated, the fuel basins will be decontaminated or otherwise stabilized, and the remainder of the spent fuel storage facility will be decontaminated in accordance with best EU practices.

It has a catalytic effect in the sense that providing funding to the VIND programme will enable the whole sequence of operations leading to a safer and more secure Vinča nuclear site to become effective.

The sustainability can be ensured by the recent governmental decision to establish a Public Company for Nuclear Facilities in Serbia (PCNFS) that will be in charge of managing all radiological issues at Vinča. This company disposes of approximately 120 persons and received annual allocations from the national budget.

### **3.3 Results and measurable indicators:**

- a. Comprehensive radiological characterisation of spent nuclear fuel storage building, all wet and dry storage basins, and fuel transfer canal performed in preparation for stabilization;
- b. Decontamination workplan and project schedule;
- c. Waste management strategy and project schedule;
- d. Safety Analysis Report – including the radiological characterization, decontamination plan, waste strategy, and a conceptual project approach – approved and licensed by the regulatory authority;

- e. Specification and procurement of storage/disposal containers for wastes and other highly radioactive materials stored in the dry storage basin;
- f. Radioactive liquid from spent nuclear fuel storage pool and transfer canal treated;
- g. Spent fuel storage basins decontaminated or otherwise stabilized;
- h. All accessible areas of the spent nuclear fuel storage building decontaminated (no loose surface contamination);
- i. All radioactive waste generated during these operations properly processed, conditioned and stored in the Waste Storage Facility, including all highly radioactive materials stored in the dry storage basin;
- j. Final safety analysis report (FSAR) and final project report completed and delivered to stakeholders.

### 3.4 Activities:

- a. Assistance in performing a comprehensive radiological characterization of spent nuclear fuel pool for stabilization;
- b. Assistance in developing a decontamination workplan and project schedule;
- c. Assistance in developing a waste management strategy and project schedule;
- d. Assistance in developing bid specifications for storage/disposal containers for wastes and other highly radioactive materials stored in the dry storage basin, including identifying at least three potential suppliers for such containers;
- e. Assistance in preparation of a safety analysis report (SAR), including a conceptual project approach, for submission to the Serbian regulatory authority. The SAR should specifically include a detailed plan for personnel protection, contamination control, materials control, radiological characterization, decontamination plan, and waste strategy;
- f. Assistance in preparation of technical specifications for contracting the stabilization of SNF pool through an open tendering procedure. The resulting contract will include the following activities:
  - (i) Identify the methods to be used to remove and condition the chemically and radiologically contaminated liquid;
  - (ii) Remove and condition (or condition in-situ) all liquid from SNF storage pool and fuel transfer canal, with the specific requirement that the resultant waste cannot be concentrated so as to be classified as High Level Waste;
  - (iii) Decontaminate or otherwise stabilize SNF pool and fuel transfer canal to eliminate any potential for personnel contamination or airborne radioactivity as a result of loose surface contamination, including leaching contamination;
  - (iv) Permanently close off (e.g., weld) all piping from the RA reactor to the underground liquid transuranic waste tanks;
  - (v) Characterize and condition any waste and materials arising from the above activities, including recording all required radiological data in the national waste management database and transfer of all conditioned waste to the Waste Storage Facility;
  - (vi) Environmental monitoring, final radiological characterization and approval of regulatory body for release for industrial use; and

- (vii) Specification of support required by PCNFS (to include as a minimum radiation protection).
- g. Assistance in preparation of technical specifications for contracting the removal and conditioning of all highly radioactive materials and wastes through an open tendering procedure. The resulting contract will include the following activities:
  - (i) Identify the methods to be used to remove and condition the highly radioactive materials and wastes;
  - (ii) Remove and condition the highly radioactive materials and wastes, with the specific requirement that the resultant waste cannot be concentrated so as to be classified as High Level Waste;
  - (iii) Decontaminate or otherwise stabilize dry storage basin to eliminate any potential for personnel contamination or airborne radioactivity as a result of loose surface contamination, including leaching contamination;
  - (iv) Characterize and condition any waste and materials arising from the above activities, including recording all required radiological data in the national waste management database and transfer of all conditioned waste to the Waste Storage Facility; and
  - (v) Specification of support required by PCNFS (to include as a minimum radiation protection).
- h. Assistance in developing a revised final safety analysis report (FSAR) submitted to and accepted by the regulatory authority.
- i. Assistance in developing a final report on this project completed and delivery to stakeholders.

### **3.5 Conditionality and sequencing:**

Fully operational Agency for Ionizing Radiation Protection and Nuclear Safety (AIRPNSS), able to license activity, is in place.

### **3.6 Linked activities:**

All the other phases of the VIND programme.

### **3.7 Lessons learned**

The current partially IPA-funded project on the repatriation of spent nuclear fuel to the Russian Federation has shown that as soon as the cooling pond for spent nuclear fuel at the Vinca Nuclear Institute is empty, the contaminated water and the metallic equipment inside the pond must be processed as part of the overall decommissioning operation.

Postponing this activity in the longer term may be revealed as complicated considering that they are very few Serbian operators in the nuclear field who are capable to perform this task.

#### 4. Indicative Budget (amounts in EUR)

			SOURCES OF FUNDING									
			TOTAL EXP.RE	IPA EU CONTRIBUTION		NATIONAL CONTRIBUTION					PRIVATE CONTRIBUTION	
ACTIVITIES	IB (1)	INV (1)	EUR (a)=(b)+(c)+(d)	EUR (b)	%(2)	Total EUR (c)=(x)+(y)+(z)	%(2)	Central EUR (x)	Regional/Local EUR (y)	IFIs EUR (z)	EUR (d)	%(2)
Activity 1	x		3 150 000	3 000 000	95	150 000	5					-
Contribution Agreement with IAEA	x		3 150 000	3 000 000	95	150 000	5					-
TOTAL IB			3 150 000	3 000 000	95	150 000	5					
TOTAL INV												
<b>TOTAL PROJECT</b>			<b>3 150 000</b>	<b>3 000 000</b>	<b>95</b>	<b>150 000</b>	<b>5</b>					

Amounts net of VAT

- (1) In the Activity row use "X" to identify whether IB or INV
- (2) Expressed in % of the **Total** Expenditure (column (a))

#### Additional Funding from Government, IAEA and Other Contributors

As discussed in preceding paragraphs, this project is intended to support the Vinča Institute Nuclear Decommissioning (VIND) programme, which is Serbia's priority nuclear safety and radiation protection support programme. For more than 50 years, Serbia was the central collection centre for all disused sealed sources and radioactive waste from the former Yugoslavia, including countries which are now EU Member States. These sealed sources and wastes are found in rooms and degraded storage facilities located all over Vinča. Only a few of the thousands of disused sealed sources and the thousands of waste containers have ever been conditioned, and the conditioning methods for those few items does not meet current international standards. Construction of proper waste processing facilities, secure storage facilities, and source conditioning facility, as well as conditioning and storage of the resultant wastes and sources, is estimated to cost more than EUR 8 million.

VIND is also intended to repatriate more than 8000 highly enriched and low enriched spent fuel elements to Russia from the RA Research Reactor. The total cost of the repackaging, transport, spent fuel reprocessing, and disposition of the resultant waste will exceed EUR 28 million.

Finally, decommissioning of the RA Research Reactor and degraded support facilities, including site-wide radiological characterization, remediation or resolution of identified sources of radiation and contamination, and upgrading the capabilities of the radiation protection programme, is estimated to cost an additional EUR 25 million or more.

The VIND programme has been in progress since 2004 and has received more than EUR 19 million in contributions through 2009 from sources other than the EU; this includes nearly EUR 14 million in support from the Serbian Ministry of Science and Technological Development. An additional EUR 24 million is currently approved for 2010-13, including EUR 5 million from the Serbian Ministry of Science and Technological Development.

2010 IPA Horizontal Programme on Nuclear Safety and Radiation Protection  
PF5 Serbia - Final

The EU is currently funding the repatriation of spent nuclear fuel to the Russian Federation (EUR 4.5 Million already contracted plus EUR 3.3 Million to be contracted soon under the 2009 IPA programme), radioactive waste management activities at Vinca (EUR 5.5 Million to be contracted under the 2008 and 2009 IPA programmes).

A summary of the VIND funding approvals is included in the following table. It should be noted that funding for decommissioning activities, sealed sources, and waste management decline sharply in 2009-11, as the government, IAEA, and other contributors are shifting their financial resources toward spent fuel repatriation. However, it is still anticipated that the Ministry of Science and Technological Development will contribute more than EUR 1 million annually to waste management and decommissioning activities, mostly in terms of security and local labour resources.



2010 IPA Horizontal Programme on Nuclear Safety and Radiation Protection  
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**Existing VIND Funding Approvals**

<b>Spent Fuel Repatriation Project (EUR)/ Phases 1 to 4 of the programme</b>			
	2004-09 Funding	2010-11 Funding	<b>Total</b>
European Commission	4 100 000	3 630 000	<b>7 730 000<sup>3</sup></b>
IAEA	715 000	2 682 411	<b>3 367 411</b>
Nuclear Threat Initiative (NGO)	360 000	76 074	<b>436 074</b>
USA	894 815	5 185 185	<b>6 080 000</b>
Czech Republic	-	732 593	<b>732 593</b>
Russia	-	2 222 222	<b>2 222 222</b>
Serbia	-	8 148 148	<b>8 148 148</b>
<b>Total</b>	<b>6 069 815</b>	<b>22 676 633</b>	<b>28 716 448</b>
<b>Sealed Sources and Waste Management (including Nuclear Security) (EUR)/ Phases 5 to 7 of the programme</b>			
	2004-09 Funding	2010-13 Funding	<b>Total</b>
European Commission	1 197 833	5 502 630	<b>6 700 462<sup>4</sup></b>
IAEA	1 247 205	32 148	<b>1 279 354</b>
Nuclear Threat Initiative (NGO)	438 471	32 127	<b>470 597</b>
USA	890 007	-	<b>890 007</b>
UK	101 481	-	<b>101 481</b>
Slovenia	75 333	44 444	<b>119 778</b>
<b>Total</b>	<b>3 950 330</b>	<b>5 611 349</b>	<b>9 561 679</b>
<b>Decommissioning (EUR)/ Phases 8 to 11 of the programme</b>			
	2004-09 Funding	<b>Total<sup>5</sup></b>	
European Commission	-	-	
Nuclear Threat Initiative (NGO)	135 079	135 079	
IAEA	225 544	225 544	
USA	18 519	18 519	
<b>Total</b>	<b>379 142</b>	<b>379 142</b>	
<b>Serbia Funding from Ministry of Science and Technological Development ( EUR)</b>			
	2004-10 Funding		
2004	500 000		
2005	800 000		
2006	1 100 000		
2007	2 500 000		
2008	4 000 000		
2009	5 200 000		
2010	5 200 000		
<b>Total</b>	<b>19 300 000</b>		

<sup>3</sup> Under the IPA2007-09 horizontal programmes on nuclear safety and radiation protection

<sup>4</sup> Idem

<sup>5</sup> Beginning in 2010, decommissioning projects were combined with waste projects in IAEA programmes

## 5. Indicative Implementation Schedule (periods broken down per quarter)

Contracts	Start of Tendering	Signature of contract	Project Completion
Contribution Agreement with IAEA	N/A	Q3 2011	Q3 2013

## 6. Cross cutting issues

### 6.1 Equal Opportunity:

The project will benefit both women and men through improvements in environmental protection and safety. On all activities, both men and women will have equal opportunities to compete for contracts and to work on any related activities.

### 6.2 Environment:

This project will improve radiological conditions within the Vinča site and the surrounding environments by reducing the potential for release of radioactivity via groundwater, airborne activity, or malicious intent. All radioactive materials, sources, etc. will be removed from areas of little control and placed in proper storage, including extensive radiological characterization and conditioning; this will ensure graded levels of security and radiological controls so as to reduce the impact on the environment, workers and the general public.

### 6.3 Minorities:

On all activities, minorities will have equal opportunities to compete for contracts and to work on any related activities.

**ANNEXES**

- I- Log frame in Standard Format
- II- Amounts (in EUR) contracted and disbursed per quarter over the full duration of the project (EU funded)
- III- Description of Institutional Framework
- IV- Related laws, regulations and strategic documents
- V- Details per EU funded contract

### ANNEX I: Logical framework matrix in standard format

LOGFRAME PLANNING MATRIX FOR Project Fiche	Programme name and number – 2010 IPA horizontal programme on nuclear safety and radiation protection – 2010/022-503	
Stabilization of Spent Nuclear Fuel Storage Pool at the Vinča Site in Serbia	Contracting period expires – 2 years following the date of the conclusion of the financing agreement.	Disbursement period expires – 1 year following the end date for execution of contracts
	Total budget: EUR 3 150 000	IPA budget: EUR 3 000 000

<b>Overall objective</b>	<b>Objectively verifiable indicators</b>	<b>Sources of Verification</b>	
To improve radiological safety by stabilizing the spent nuclear fuel pool after removal of the SNF at the Vinča Institute and bringing it in line with best EU radiation control practices.			
<b>Project purpose</b>	<b>Objectively verifiable indicators</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
To contribute to the implementation of the VIND Programme through the stabilization of the radiological conditions in the spent fuel storage building, pool and transfer canal following return of all spent nuclear fuel to the Russian Federation, which is the country of origin.			

<b>Results</b>	<b>Objectively verifiable indicators</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
<ol style="list-style-type: none"> <li>1. Comprehensive radiological characterisation of spent nuclear fuel storage building, all wet and dry storage basins, and fuel transfer canal performed in preparation for stabilization;</li> <li>2. Decontamination workplan and project schedule;</li> <li>3. Waste management strategy and project schedule;</li> <li>4. Safety Analysis Report – including the radiological characterization, decontamination plan, waste strategy, and a conceptual project approach – approved and licensed by the regulatory authority;</li> <li>5. Specification and procurement of storage/disposal containers for waste and other <u>highly radioactive</u> materials stored in the dry storage basin;</li> <li>6. Radioactive liquid from spent nuclear fuel storage pool and transfer canal treated;</li> <li>7. Spent fuel storage basins decontaminated or otherwise stabilized;</li> <li>8. All accessible areas of the spent nuclear fuel storage building decontaminated (no loose surface contamination);</li> <li>9. All radioactive waste generated during these operations properly processed, conditioned and stored in the Waste Storage Facility, including all <u>highly radioactive</u> materials stored in the dry storage basin;</li> <li>10. Final safety analysis report (FSAR) and final project report completed and delivered to stakeholders</li> </ol>	<p>Safety Analysis Report approved by the Serbian regulatory body.</p> <p>The facility has become an uncontrolled area after measurements of the residual radioactivity.</p> <p>Number of drums of conditioned radioactive waste in store.</p> <p>Approval of the FSA report.</p>	<p>Visit of the Vinca facilities</p> <p>Reports to the PCNFS and to the Agency for Ionizing Radiation Protection and Nuclear Safety of Serbia.</p>	<p>The fuel must be removed from the storage facility.</p> <p>Established criteria for radioactive waste treatment/conditioning and storage, should be in place.</p>
<b>Activities</b>	<b>Means</b>	<b>Costs</b>	<b>Assumptions</b>
All the following activities should be contracted through a Contribution Agreement with the IAEA.		EUR 3 000 000	
<ol style="list-style-type: none"> <li>1. Assistance in performing a comprehensive radiological characterization of spent nuclear fuel pool for stabilization;</li> <li>2. Assistance in developing a decontamination workplan and project schedule;</li> <li>3. Assistance in developing a waste management strategy and project schedule;</li> <li>4. Assistance in developing bid specifications for storage/disposal</li> </ol>			

<p>containers for wastes and other <u>highly radioactive</u> materials stored in the dry storage basin, including identifying at least three potential suppliers for such containers;</p> <p>5. Assistance in preparation of a safety analysis report (SAR), including a conceptual project approach, for submission to the Serbian regulatory authority. The SAR should specifically include a detailed plan for personnel protection, contamination control, materials control, radiological characterization, decontamination plan, and waste strategy;</p> <p>6. Assistance in preparation of technical specifications for contracting the stabilization of SNF pool through an open tendering procedure. The resulting contract will include the following activities:</p> <ul style="list-style-type: none"> <li>(i) Identify the methods to be used to remove and condition the chemically and radiologically contaminated liquid;</li> <li>(ii) Remove and condition (or condition in-situ) all liquid from SNF storage pool and fuel transfer canal, with the specific requirement that the resultant waste cannot be concentrated so as to be classified as High Level Waste;</li> <li>(iii) Decontaminate or otherwise stabilize SNF pool and fuel transfer canal to eliminate any potential for personnel contamination or airborne radioactivity as a result of loose surface contamination, including leaching contamination;</li> <li>(iv) Permanently close off (e.g., weld) all piping from the RA reactor to the underground liquid transuranic waste tanks;</li> <li>(v) Characterize and condition any waste and materials arising from the above activities, including recording all required radiological data in the national waste management database and transfer of all conditioned waste to the Waste Storage Facility;</li> <li>(vi) Environmental monitoring, final radiological characterization and approval of regulatory body for release for industrial use; and</li> <li>(vii) Specification of support required by PCNFS (to include as a minimum radiation protection).</li> </ul> <p>7. Assistance in preparation of technical</p>			
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<p>specifications for contracting the removal and conditioning of all highly radioactive materials and wastes through an open tendering procedure. The resulting contract will include the following activities:</p> <ul style="list-style-type: none"> <li>(i) Identify the methods to be used to remove and condition the highly radioactive materials and wastes;</li> <li>(ii) Remove and condition the highly radioactive materials and wastes, with the specific requirement that the resultant waste cannot be concentrated so as to be classified as High Level Waste;</li> <li>(iii) Decontaminate or otherwise stabilize dry storage basin to eliminate any potential for personnel contamination or airborne radioactivity as a result of loose surface contamination, including leaching contamination;</li> <li>(iv) Characterize and condition any waste and materials arising from the above activities, including recording all required radiological data in the national waste management database and transfer of all conditioned waste to the Waste Storage Facility; and</li> <li>(v) Specification of support required by PCNFS (to include as a minimum radiation protection).</li> </ul> <p>8. Assistance in developing a revised final safety analysis report (FSAR) submitted to and accepted by the regulatory authority.</p> <p>9. Assistance in developing a final report on this project completed and delivery to stakeholders.</p>			
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**ANNEX II: Amounts (EUR) contracted and disbursed per quarter over the full duration of the project (EU funded)**

<b>Contracted</b>	<b>Q3 2011</b>	<b>Q4 2011</b>	<b>Q1 2012</b>	<b>Q2 2012</b>	<b>Q3 2012</b>	<b>Q4 2012</b>	<b>Q1 2013</b>	<b>Q2 2013</b>
Contribution Agreement	3 000 000							
<b>Cumulated</b>	3 000 000							
<b>Disbursed</b>	<b>Q3 2011</b>	<b>Q4 2011</b>	<b>Q1 2012</b>	<b>Q2 2012</b>	<b>Q3 2012</b>	<b>Q4 2012</b>	<b>Q1 2013</b>	<b>Q2 2013</b>
Contribution Agreement	332 500	332 500	332 500	332 500	1 092 500	332 500	190 000	55 000
<b>Cumulated</b>	<b>332 500</b>	<b>665 000</b>	<b>997 500</b>	<b>1 330 000</b>	<b>2 422 500</b>	<b>2 755 000</b>	<b>2 945 000</b>	<b>3 000 000</b>

**ANNEX III: Description of Institutional Framework**

The responsibilities for the fields related to the peaceful use of nuclear energy (health, the environment, science and technology, nuclear safety and radiation protection, agriculture, transport, etc) rests with Ministry of Science and Technological Development, Ministry of Environment and Spatial Planning, and independent regulatory body, Agency for Ionizing Radiation Protection and Nuclear Safety of Serbia.

The Ministry of Science and Technological Development (MSTD) is responsible for R&D in the nuclear sector, as well as for the inspection in the field of nuclear safety. The Ministry of Environment and Spatial Planning is responsible for the inspection in the field of radiation protection. Licensing of the radiation or nuclear activities lies with the new Agency.

In force is the Law on Ionizing Radiation Protection and on Nuclear Safety was enacted in 2009 (36/09). It establishes measures for the protection against ionising radiation, as well as nuclear safety measures, liability for nuclear damages, supervision and authorization, penalties. Based on the former Law on Protection against Ionizing Radiation (46/96), there are 11 regulations related to protection against ionizing radiation and for the safety of radiation sources and 5 regulation related on nuclear safety and security. All the regulations are still applicable.

Independent regulatory body, Agency for Ionizing Radiation Protection and Nuclear Safety of Serbia, was established in accordance with the Law on Ionizing Radiation Protection and on Nuclear Safety. It is expected that it will be fully operational in mid 2010.

**ANNEX IV: Related Laws, Regulations and Strategic Documents**

Project-Specific Documents

- Decision of the Serbian government to decommission the RA research reactor located at the Vinča Institute and approval of the VIND programme (2002 and 2004)
- Law on ionising radiation protection and on nuclear safety (2009)
- Article 110 of the draft SAA
- Nuclear Safety and Radiation Protection action of the Multi-beneficiary MIPD 2009-2011

International Conventions and Treaties



Serbia is a party to the following instruments under the IAEA's auspices

- Agreement on the Privileges and Immunities of the IAEA
- Vienna Convention on Civil Liability for Nuclear Damage
- Convention on Physical Protection of Nuclear Material
- Convention on Early Notification of a Nuclear Accident
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

Serbia has signed but has not yet ratified the Optional Protocol Concerning the Compulsory Settlement of Disputes to the Vienna Convention on Civil Liability for Nuclear Damage.

As a party to the Treaty on the Non-Proliferation of Nuclear Weapons, Serbia has Comprehensive Safeguards Agreements with the IAEA for the Application of Safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons. It should be also noted that Serbia has signed but has not yet ratified the Additional Protocol to the Treaty.

#### **ANNEX V: Details per EU funded contract**

This project together with the projects:

- Project No 3: "Registry of nuclear materials, radioactive sources, wastes and exposures" – Serbia.
- Project No 4: "Part 2 of project for conditioning and secure storage of disused sealed radioactive sources and any other radioactive waste and nuclear materials located in Serbia".

which are all part of the VIND programme, will be supported through a Contribution agreement with the IAEA to be concluded in the third quarter of 2011.

The Contribution agreement will be concluded in accordance with the terms of the Financial and Administrative Framework Agreement (FAFA) between the European Union and the United Nations, signed on 29 April 2003, to which the IAEA has adhered on 17 September 2004.