

**Project Fiche – 2008 IPA Horizontal Programme
on Nuclear Safety and Radiation Protection**

1. Basic information

- 1.1 CRIS Number:** 2008/020-350
1.2 Title: Conditioning and secure storage of disused sealed radioactive sources
1.3 ELARG Statistical code: 03.64 - Nuclear safety
1.4 Location: (Vinča Institute in Serbia)

Implementing arrangements:

1.5 Contracting Authority:

The European Community represented by the Commission of the European Communities 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
 Institute of Nuclear Sciences
 11001, Belgrade, P.O Box 522
 Dr. Jovan Nedeljkovic, Director General

Financing:

- 1.8 Overall cost (VAT excluded):** EUR 849 000
1.9 EU contribution: EUR 616 000
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: 3 years following the end date for contracting

2. Overall Objective and Project Purpose

2.1 Overall Objective:

To improve radioactive waste management at the Vinča Institute in line with best EU practices.

2.2 Project purpose:

To contribute to the implementation of the Vinča Nuclear Institute Decommissioning programme (VIND) that is coordinated and partly supported by the IAEA through the conditioning and storage of approximately 4000 sealed radioactive sources.

2.3 Link with AP/NPAA/EP/SAA

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

The Serbia 2007 progress report mentions that "little progress has been made in the area of nuclear safety and radiation protection. The dismantling operations and removal of spent fuel from the Vinča research reactor are in progress, but faces numerous difficulties. However Serbia has not yet acceded to the Convention on Nuclear Safety and to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management".

2.4 Link with MIPD

The MIPD action entitled "Nuclear Safety and Radiation Protection" mentions that there are "specific problems posed by the management of radioactive waste and spent nuclear fuel in Serbia". In this context, the MIPD intends to support "further alignment of the management practices of radioactive materials with EU best practices".

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)
- 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:

The Vinča Institute was the central collection and storage location for disused sealed radioactive sources (DSRS) for all the former Yugoslavia. These sources were used in the past for a large variety of medical, industrial and domestic applications (e.g. lightning rods). All DSRS nowadays generated in Serbia are also stored at the Vinča Institute. The estimated source inventory is as follows:

- Several tens of DSRS of category 1&2 (IAEA categorisation);
- Approximately 4000 DSRS of category 3 & 4
- About 2000 DSRS of category 4 &5
- 40,000 smoke detectors of category 5

All these sources are stored in light buildings in very poor condition. Safety and security of this kind of storage cannot be guaranteed.

Within the framework of the VIND programme the IAEA is supporting conditioning, packaging and storage of each of these DSRS categories. Packaging and secured storage of sources of category 1&2 should be performed via US and IAEA funding. Conditioning and storage of DSRS of category 3 &4 is only very partly funded by the IAEA. Other categories of DSRS are funded by the IAEA with the support of the Serbian Ministry of Science.

It is important to note that sealed radioactive sources of category 3 "if not safely managed or securely protected, could cause permanent injury to a person who handled it, or was otherwise in

contact with it, for some hours"¹. Category 1&2 sources could cause permanent injury in a significantly shorter period of time.

In addition to the retrieval, repackaging and transport of spent nuclear fuel from the RA research reactor at the Vinča Institute to the Russian Federation, the VIND programme comprises the following phases of activities that should be implemented during the years 2009-2011:

- Phase 6: Conditioning, packaging and storage of disused sealed radioactive sources;
- Phase 7: Conditioning and processing of improperly stored and unconditioned radioactive waste;
- Phase 8: Decommissioning of the old storage facilities for sources and radioactive waste;
- Phase 9: Dismantling of the old piping system and tanks containing radioactive liquid waste, and
- Phase 10: Radioactivity survey of the Vinča site;

Several donor countries (e.g. the USA, Norway) have already expressed their intention to contribute to the funding of these activities as well as the IAEA. However the funds that are expected to be collected 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 Phase 6: "Conditioning, packaging and storage of disused sealed radioactive sources" with the focus on sealed radioactive sources of category 3 & 4.

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

The project will reduce the radiological risks related to the unsafe and unsecured storage of sealed radioactive sources. It will also contribute to reduce the risks of explosion of the so-called "dirty bombs" (radioactive dispersal device, RDD) somewhere in the European Union if some of these sources are stolen with malicious purposes.

It has a catalytic effect in the sense that providing funding to phase 6 of the VIND programme will enable the whole sequence of operations leading to a safer and more secure Vinča nuclear site to become effective.

3.3 Results and measurable indicators:

- Design and preparation of the source receiving area (temporary storage) of the "Source Conditioning Facility" (SCF) completed;
- Design and preparation of the SCF completed;
- Safety Analysis Report for both facilities approved by the Serbian regulatory body;
- Construction and fitting out of both facilities completed;
- Personnel in charge of operating both facilities trained;
- At least 20.000 category 5 sources (smoke detectors) conditioned and securely stored in accordance with defined production schedule;
- At least 2000 category 3-4 sources conditioned and securely stored in accordance with defined production schedule;
- Comprehensive inventory established for all disused sources including sealed and unsealed sources and conditioned sources;

¹ IAEA-TECDOC-1344 "Categorisation of radioactive sources", July 2003

- Orphan sources Search and Secure programme implemented across Serbia with the documented security of at least 1000 sealed sources, including recovery and secure storage of at least 200 orphan sources in category 3-4.

3.4 Activities:

- Assistance with design and preparation of a temporary secure and radiologically safe storage receiving area which is a part of (either within or adjacent to) the "Source Conditioning Facility" (SCF) for receiving drums, pallets and shields with unconditioned sources; this secure/safe source storage area will be subject to all of the security specifications, radiation protection specifications, occupational safety specifications, etc. that are applicable to the Source Conditioning Facility;
- Assistance with design and preparation of the SCF that will be used first to condition sealed radioactive sources and then to store them until the Serbian National Waste Storage Facility becomes available. The support equipment: hot cells, storage containers and storage shields, lifting devices, pallet trucks, fork lifts, security systems, and other source handling and processing equipment will be provided by the Serbian government, IAEA, and other contributors;
- Establishment of a safety analysis report (SAR) that will comprise, amongst others, radiation protection, occupational safety, and security issues related to both facilities. The SAR must be in line with all international basic safety standards including the Council Directive 96/29 Euratom;
- Submission of the SAR to the new nuclear regulatory body; the facility will be licensed by the regulatory body;
- Setting up and implementation of a training programme for the personnel in charge of operating both facilities.
- After approval of the SAR and licensing by the regulatory body and training of all personnel, operation of both facilities;
- Establishment of a production schedule for the various categories of sources which will ensure that the objective and performance indicators are achieved in a timely manner; subsequent implementation of the production schedule and source conditioning;
- Establishment of a formal inventory of all discrete radioactive sources; including sealed and unsealed, in use at Vinca and elsewhere in Serbia; and including location, characterisation (physical, chemical and radiological characteristics), category, usage status (in use, excess, conditioned for secure storage, disposed, repatriated, etc.), responsible person (by position), security status, estimated recovery date (as applicable), eligibility for repatriation to a specified county of origin, and other important information; with all applicable information provided to the IAEA databases for sources;
- Implementation of a nation-wide Orphan Source Search and Secure Programme with defined performance indicators and appropriate planning to ensure comprehensive national coverage; this activity will be funded in part by a third party donor (USA).
- Provide additional experts as needed for progress assessment, on site assistance, problem resolution, verification of achievement of performance indicators.

All these activities will be supported through a European Community Contribution Agreement with the IAEA (see Annex V).

3.5 Conditionality and sequencing:

The implementation of this project requires a functioning regulatory body in charge of nuclear issues in Serbia since part of the project will consist of drafting a Safety Analysis Report to be reviewed and approved by this body, as well as licensing of the SCF and temporary source storage facility for operation.

3.6 Linked activities:

All the other phases of the VIND programme.

3.7 Lessons learned

Since 2004 the implementation of the VIND programme under the coordination of the IAEA is proceeding according to the time schedule. However, the latest developments of this programme showed that supplementary technical expertise would be required for the monitoring taking into account the increasing number of projects being implemented and their high technical complexity.

4. Indicative Budget (amounts in €)

Activities	TOTAL COST	SOURCES OF FUNDING										
		EU CONTRIBUTION				NATIONAL PUBLIC CONTRIBUTION					PRIVATE	
		Total	% *	IB	INV	Total	% *	Central	Regional	IFIs	Total	% *
<u>Activity 1</u>												
<u>contract 1</u>	826 000	593 000	72		593 000	8 000	1				225 000	26,5
<u>Contingencies (about 4%)</u>	23 000	23 000	100		23 000	0	0				0	0
TOTAL	849 000	616 000	72,5		616 000	8 000	1				225 000	26,5

Amounts net of VAT

* expressed in % of the Total Cost

Co-financing from the Serbian government, IAEA and other contributors

As discussed in preceding paragraphs, this project is intended to support the Vinca Institute Nuclear Decommissioning (VIND) programme, which is Serbia's priority nuclear safety and radiation protection support programme. For more than 40 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 Vinca. 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 safety 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 25 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 16 million in contributions through 2008 from sources other than the EC; this includes nearly EUR 9 million in support from the Serbian Ministry of Science. An additional EUR 14 million is currently approved for 2009-11, including EUR 10 million from the Serbian Ministry of Science. The EC has committed to a EUR 5.46 million through a 2007 Contribution Agreement.

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 will contribute more than EUR 1 million annually to waste management and decommissioning activities, mostly in terms of local labour resources.

Existing VIND Funding Approvals

Spent Fuel Repatriation Project (€) Phases 1, 2 and 3 of the programme			
	2004-08 Funding	2009-11 Funding	Total
European Commission	885 000	3 545 000	4 430 000²
IAEA	1 910 152	526 667	2 436 819
Nuclear Threat Initiative (NGO)	2 578 820	-	2 578 820
USA *	550 000	2 666 667	3 216 667
Russia *	-	-	-
Total	5 923 972	6 738 333	12 662 305

* IAEA is negotiating with USA and Russia additional funding of more than €6M each.

Sealed Sources and Waste Management (including Nuclear Security) (€)/ Phases 4 to 7 of the programme			
	2004-08 Funding	2009-11 Funding	Total
European Commission	715 000	315 000	1 030 000³
IAEA	1 065 724	200 000	1 265 724
Nuclear Threat Initiative (NGO)	334 333	-	334 333
USA	566 667	300 000	866 667
UK	40 000	40 000	80 000
Slovenia	30 000	40 000	70 000
Total	2 751 724	895 000	3 646 724

Decommissioning (€)/ Phases 8 to 10 of the programme			
	2004-08 Funding	2009-11 Funding	Total
European Commission	-	-	-
Nuclear Threat Initiative (NGO)	125 671	-	125 671
IAEA	314 618	-	314 618
USA	6 833	-	6 833
Total	447 122	-	447 122

Serbia Funding from Ministry of Science (€)	
	2004-08 Funding
2004	500 000
2005	800 000
2006	1 100 000
2007	2 500 000
2008	4 000 000
2009-2011*	10 200 000
Total	19 100 000

* 2.5M/year + estimated 2.7M for fuel repatriation contract

Total Known Funding to VIND, excluding EC Funding (€)			
	2004-08 Funding	2009-11 Funding	Total

² Under the 2007 IPA horizontal programme on nuclear safety and radiation protection

³ Idem

Total	16 422 818	13 973 333	30 396 151
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5. Indicative Implementation Schedule (periods broken down per quarter)

Contracts	Start of Tendering	Signature of contract	Project Completion
Contract 1	N/A	1Q 2009	30 December 2011

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 Vinca 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

- 1- Log frame in Standard Format
- 2- Amounts contracted and Disbursed per Quarter over the full duration of Programme
- 3- Description of Institutional Framework
- 4 - Related laws, regulations and strategic documents:
- 5- Details per EU funded contract

ANNEX 1: Logical framework matrix in standard format

LOGFRAME PLANNING MATRIX FOR Project Fiche	Programme name and number – 2008 IPA Horizontal Programme on Nuclear Safety and Radiation Protection	2008/020-350
Conditioning and secure storage of disused sealed radioactive sources in Serbia	Contracting period expires – 2 years following the date of the conclusion of the Financing Agreement.	Disbursement period expires – 3 years following the end date for contracting
	Total budget including 5% contingencies: EUR 849000	IPA budget: EUR 616 000

Overall objective	Objectively verifiable indicators	Sources of Verification	
A comprehensive program has been established to condition and store safely and securely disused sealed sources, including implementation of a nation-wide orphan source search and secure program and source inventory database.	a - At least 20,000 category 5 sources (smoke detectors) conditioned and securely stored in accordance with defined production schedule;	a - Source inventory and CWID database.	
	b - At least 2,000 category 3-4 sources conditioned and securely stored in accordance with defined production schedule;	b - Source inventory and CIWD database.	
	c - Comprehensive inventory established for all disused sources including sealed and unsealed sources and conditioned sources.	c - Source inventory database.	
	d - Orphan sources Search and Secure programme implemented across Serbia with the documented security of at least 1000 sealed sources, including recovery and secure storage of at least 200 orphan sources in category 3-4.	d - Source inventory database and source recovery records.	
Project purpose	Objectively verifiable indicators	Sources of Verification	Assumptions
To contribute to the implementation of the Vinča Nuclear Institute Decommissioning project (VIND) that is coordinated and partly supported by the IAEA through the conditioning and storage of approximately 4000 sealed radioactive sources.	Approximately 4000 disused sealed sources conditioned and transferred to secure storage.	Source inventory database; source conditioning production records	Production schedule can be established which will support this level of effort in the available hot cells.
Results	Objectively verifiable indicators	Sources of Verification	Assumptions
<ul style="list-style-type: none"> Design and preparation of the source receiving area (temporary storage) of the "Source Conditioning Facility" (SCF) completed; 	<ul style="list-style-type: none"> Source conditioning facility commissioned, licensed and operational; 	<ul style="list-style-type: none"> License available; sources being processed. 	Ministry of Science redesignates hot cell facility for source conditioning.
<ul style="list-style-type: none"> Design and preparation of the SCF completed; 	<ul style="list-style-type: none"> Progress reports 		
<ul style="list-style-type: none"> Safety Analysis Report for both facilities approved by the Serbian regulatory body; 	<ul style="list-style-type: none"> Source conditioning being performed; approximately 4000 sealed sources conditioned and safely stored. 		
<ul style="list-style-type: none"> Construction and fitting out of both facilities completed; 	<ul style="list-style-type: none"> Attendance certificates for trainees available 		
<ul style="list-style-type: none"> Personnel in charge of operating both facilities trained; 		<ul style="list-style-type: none"> Visit of the facility 	
<ul style="list-style-type: none"> At least 20.000 category 5 sources (smoke detectors) conditioned and securely stored in accordance with defined production schedule; 		<ul style="list-style-type: none"> Source inventory database 	

<ul style="list-style-type: none"> At least 2000 category 3-4 sources conditioned and securely stored in accordance with defined production schedule; 			
<ul style="list-style-type: none"> Comprehensive inventory established for all disused sources including sealed and unsealed sources and conditioned sources; 			
<ul style="list-style-type: none"> Orphan sources Search and Secure programme implemented across Serbia with the documented security of at least 1000 sealed sources, including recovery and secure storage of at least 200 orphan sources in category 3-4. 	<ul style="list-style-type: none"> Orphan source programme in progress; approximately 200 orphan sources identified; some recovered 		
Activities	Means	Costs	Assumptions
All the following activities should be contracted through a Contribution Agreement with the International Atomic Energy Agency. At this stage, the number of contracts or sub-contracts identified so far for each beneficiary country is only indicative.			
<ul style="list-style-type: none"> Assist with design and preparation of a temporary secure and radiologically safe storage receiving area which is a part of (either within or adjacent to) the SCF for receiving drums, pallets and shields with unconditioned sources; this secure/safe source storage area will be subject to all of the security specifications, radiation protection specifications, occupational safety specifications, etc. that are applicable to the Source Conditioning Facility. 	<ul style="list-style-type: none"> Contract for local labour; funded in 2008 under SRB3003. 	<ul style="list-style-type: none"> IAEA funded 	Ministry of Science redesignates hot cell facility for source conditioning.
<ul style="list-style-type: none"> Assist with design and preparation of the SCF that will be used first to condition sealed radioactive sources and then to store them until the Serbian National Waste Storage Facility becomes available. 	<ul style="list-style-type: none"> Support equipment, hot cells, storage containers and storage shields, lifting devices, pallet trucks, fork lifts, security systems, and other source handling and processing equipment provided in 2008 through donors, IAEA or Vinca. 	<ul style="list-style-type: none"> IAEA funded 	
<ul style="list-style-type: none"> Establish a safety analysis report (SAR) that will comprise, amongst others, radiation protection, occupational safety, and security issues related to both facilities. The SAR must be in line with all international basic safety standards including the EC Council Directive 96/29 Euratom. 	<ul style="list-style-type: none"> Local labour funded by Ministry of Science (MoS). 	<ul style="list-style-type: none"> IAEA funded Ministry of Science (MoS) funded 	
<ul style="list-style-type: none"> Submission of the SAR to the new nuclear regulatory body. 	<ul style="list-style-type: none"> Local labour funded by MoS. 	<ul style="list-style-type: none"> MoS funded 	<ul style="list-style-type: none"> IAEA and MoS work as indicated above must be completed before proceeding with EC contracted support.
<ul style="list-style-type: none"> SAR licensed for operation. 	<ul style="list-style-type: none"> Local labour funded by MoS. 	<ul style="list-style-type: none"> MoS funded 	
<ul style="list-style-type: none"> Set up and implement a training programme for all personnel working at or responsible for the SCF and the temporary SCF source storage facility. 	<ul style="list-style-type: none"> Course materials; local lecturers; 4 week course at Vinca; funded in 2008 under SRB3003. 	<ul style="list-style-type: none"> IAEA funded 	
<ul style="list-style-type: none"> Establish a production schedule for the various categories of sources which will ensure that the objective and performance indicators are achieved in a timely manner. 	<ul style="list-style-type: none"> Various experts for 3 weeks specialized training; funded in 2008 under SRB3003. 	<ul style="list-style-type: none"> IAEA funded 	
<ul style="list-style-type: none"> Implementation of the production schedule and source conditioning, including transfer of conditioned sources to the secure storage facility. 	<ul style="list-style-type: none"> Local labour funded by MoS; also expert assistance developing production schedule. 	<ul style="list-style-type: none"> MoS funded 	

<ul style="list-style-type: none"> Establish a formal inventory of all discrete radioactive sources; including sealed and unsealed sources, in use at Vinca and elsewhere in Serbia. Inventory will include location, characterisation (physical, chemical and radiological characteristics), category, usage status (in use, excess, conditioned for secure storage, disposed, repatriated, etc.), responsible person (by position), security status, estimated recovery date (as applicable), eligibility for repatriation to a specified county of origin, and other important information. 	<ul style="list-style-type: none"> EC funded contract for Serbia/EU labour. 	<ul style="list-style-type: none"> EUR 340 000 	
<ul style="list-style-type: none"> All applicable information will also be provided to the IAEA databases for sources on at least a quarterly basis until the Vinca source inventory is completed; annually thereafter. 	<ul style="list-style-type: none"> Sealed source management, conditioning, etc.; 2x24 mos. 	<ul style="list-style-type: none"> EUR 20 000 	
<ul style="list-style-type: none"> Personnel trained on orphan source search and secure program, including equipment, search techniques, and secure/recovery techniques. 	<ul style="list-style-type: none"> EC funded contract for Serbia/EU labour... 	<ul style="list-style-type: none"> EUR 20 000 	
<ul style="list-style-type: none"> Orphan Source Search and Secure instrumentation received and calibrated. 	<ul style="list-style-type: none"> Local labour funded by MoS. 	<ul style="list-style-type: none"> MoS funded 	
<ul style="list-style-type: none"> Implement Search & Secure process. 	<ul style="list-style-type: none"> Course materials; local lecturers; 3-day course at Vinca; funded in 2007 under bilateral agreement. 	<ul style="list-style-type: none"> Funded by USDOE 	
<ul style="list-style-type: none"> Record all sources identified and recovered in a national Source Inventory Database. 	<ul style="list-style-type: none"> Equipment provided & funded by USDOE under bilateral agreement. 	<ul style="list-style-type: none"> Funded by USDOE 	
<ul style="list-style-type: none"> Disused sources recovered and returned to Vinca for conditioning in the SCF. 	<ul style="list-style-type: none"> Contract for S&S labour funded by EC. 	<ul style="list-style-type: none"> EUR 71 000 	
<ul style="list-style-type: none"> Other expert and staff travel for progress assessment, on site assistance, problem resolution, verification of achievement of performance indicators. (Applies to all activities.) 	<ul style="list-style-type: none"> Contract for S&S recordkeeping funded by USDOE. 	<ul style="list-style-type: none"> EUR 31 000 	<ul style="list-style-type: none"> National labour resources available to perform search.
	<ul style="list-style-type: none"> Contract for source recovery funded by EC. 	<ul style="list-style-type: none"> EUR 79 000 	
	<ul style="list-style-type: none"> Expert or staff assistance. 	<ul style="list-style-type: none"> EUR 31 000 	

ANNEX 2: amounts (in €) Contracted and disbursed by quarter for the project

Contracted	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010	Q4 2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011
Contract 1	616 000 Including about 4 % contingencies											
Cumulated	616 000 Including about 4 % contingencies											
Disbursed	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010	Q4 2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011
Contract 1	23 000	23 000	41 000	66 000	68 000	68 000	35 000	68 000	68 000	66 000	34 000	56 000
Cumulated	23 000	46 000	87 000	153 000	221 000	289 000	324 000	392 000	460 000	526 000	560 000	616 000

ANNEX 3: 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) rest with several ministries.

The Ministry of Science (MS) is responsible for R&D in the nuclear sector, for nuclear safety, nuclear materials and radioactive waste management in the country. Under the Ministry's competence and financing are the R&D, including the Vinča Institute of Nuclear Sciences, the Institute of Technology of Nuclear and Other Mineral Raw Materials (ITNMS), the Institute of Geology, the Institute of Nuclear Energy Application in Agriculture (INEP) and others. The Ministry ensures that the law on the nuclear safety and the related regulations are carried out and provides the financial resources for the activities. The MS is responsible for bilateral and multilateral international scientific-technical co-operation of Serbia, including the cooperation with the IAEA.

The Ministry for Environmental Protection (MEP) is responsible and leading in radiation protection and monitoring of the environment, emergency planning etc.

In force is the Law on Protection against Ionizing Radiation that was enacted in 1996 (46/96). 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 Law on Protection against Ionizing Radiation, 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.

Currently, there is no effectively independent Serbian regulatory body for radiation and nuclear safety. Law 46/96 does not make provision for the establishment of a regulatory body, although it makes reference to the 'competent Ministry'. Currently, in accordance with the *Law on Ministries*, the Ministry of Science and Ministry of Environmental Protection are identified as the competent Ministries.

A temporary regulatory body called the 'Regulatory Commission on Radiation and Nuclear Safety' has been established by the Ministry of Science to administer the decommissioning of the research reactor at the Vinca Institute, the shipment of spent nuclear fuel to the original Russian supplier, and the treatment of radioactive waste.

The Vinca Institute of Nuclear Sciences was founded in 1948. It is the main institute involved in research and applications in nuclear science (since 1968 multidisciplinary, not only nuclear) and covers a wide range of scientific and engineering fields; 800 employees, out of which 400 is research staff, organized in 16 laboratories (actually departments) from Nuclear Physics, Theoretical Physics and Physics of Condensed Matter, Radiation and Environmental Protection, Nuclear Engineering to Multidisciplinary Research and Engineering which are, to a large extent, independent.

The Radiation and Environmental Protection Laboratory covers: environmental radioactivity control, ionization radiation dosimetry, metrology analyses, radiation protection, radioactive waste arrangement and decontamination, reactor dosimetry, instrumentation servicing and operative dosimetry. The Nuclear Engineering Laboratory covers: reactor physics, safety and control of nuclear reactors, nuclear engineering and radiation protection. Together with the

Reactor Department, it is responsible for two research reactors: RA (shut down for decommissioning) and RB (zero power, requiring upgrading).

The RA research reactor went into operation in 1959 and has been shut down since 1984 due to fuel corrosion problems and for the refurbishment of the reactor control and safety system. Since the date, it stays with a partially loaded core containing 480 fuel slugs with 80% enriched uranium. In addition, 6656 spent fuel slugs with 2% enriched uranium and 884 slugs with 80% enrichment are located in a spent fuel storage pool containing about 200 tons of stagnant water of poor quality to minimize the corrosion process.

ANNEX 4: 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)
- Draft of the Serbian new Law on ionising radiation protection and on nuclear safety (2006) and existing Serbian Law on Protection against Ionising Radiation (1996)
- Article 110 of the draft SAA
- Nuclear Safety and Radiation Protection action of the multi-country MIPD programme

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 a Comprehensive Safeguards Agreements with the IAEA for the Application of Safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons.

ANNEX 5: Details per EU funded contract

This project together with the projects:

- Characterisation and conditioning of radioactive waste;
- Decommissioning of Degraded Waste Storage Hangar No 1;
- Radioactivity survey;
- Strengthening radiation safety capabilities and infrastructure;
- Project Management Unit for EU supported projects;

which are all part of the VIND programme, will be supported through a European Community Contribution Agreement with the IAEA.

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