

**TERMS OF REFERENCE
(ToR)**

for the Revision 2
of the
Program of NPP Krško Decommissioning and SF & LILW Disposal

Rev.2

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Abbreviations

AB	Advisory Board
APO	APO Ltd, Environmental services, Zagreb, Croatia
ARAO	Agency for Radwaste Management, Ljubljana, Slovenia
D&D	Decommissioning and dismantling
DP	Decommissioning Program
IAEA	International Atomic Energy Agency
IGC	Intergovernmental Committee
LILW	Low and intermediate level radioactive waste
NPP	Nuclear power plant
PDP	Preliminary Decommissioning Plan
PT	Project Team
RW or RAW	Radioactive waste
SID	Strategy of Immediate Dismantling
SF	Spent nuclear fuel
ToR	Terms of References

1. Introduction

The first iteration of the joint Slovenian-Croatian *Program of NPP Krško Decommissioning and SF and LILW disposal* (Decommissioning program, DP) was prepared in 2003/2004, as required by the paragraph 10 of the *Agreement between the governments of Slovenia and Croatia on the status and other legal issues related to investment, exploitation, and decommissioning of the Nuclear power plant Krško*. The Intergovernmental Committee (IGC), consisting of ministers and other governmental representatives who coordinated the implementation of the *Agreement*, required that the *Program* should be an extensive revision of the former Slovenian program from 1996 (known as the NIS study). The main purpose of the joint *Program* was to estimate the expenses of the future decommissioning, radioactive waste and spent fuel management for Krško NPP, as the basis for establishment and financing of decommissioning fund in Croatia, and for correction of the annual payments into the existing decommissioning fund in Slovenia.

DP development was entrusted to specialized organizations both in Croatia and Slovenia (APO & ARAO), which formed a joint Project team as the operative body for the project realization. Also, IC nominated the Advisory board, which was supervising the activities and resolving the issues raised by the Project team. NPP Krško was supplying the data needed. Consulting firms from Croatia and Slovenia were involved in the project development, and the IAEA experts gave critical contribution to specific issues through TC projects and workshops in Slovenia and Croatia.

DP was completed in the first half of 2004, as a document consisting of several modules. Modules 3, 4 and 5 described LILW management, SF management and NPP decommissioning. Modules 6 and 7 developed and evaluated various integrated scenarios of decommissioning and waste management. The recommended scenario, which was the basis for costs estimates, was combined strategy of immediate dismantling (SID) with 45 years of SF dry storage before its disposal (or export) would be completed, so it was named SID-45.

After a favorable opinion of the mutually agreed reviewer *EDF (Electricite de France)* and Intergovernmental Committee at the beginning of 2005 DP was finally adopted after both Slovenian and Croatian governments and Croatian parliament gave their approval.

However, the intergovernmental *Agreement* requires that periodical revisions of DP should be carried out at least each five years. Therefore, the second Revision of the joint DP must be completed by the end of 2009.

2. Project Purpose and Objectives

The purpose of the project is to prepare the Revision 2 of DP that will:

- incorporate relevant developments since the 1st revision into DP modules and scenarios,
- improve the level of details and reliability of DP, both technically and financially, and
- propose updated and more accurate cost estimates and appropriate financing models.

The objectives of the project are:

1. Preparation *ab ovo* of new decommissioning module, which will be NPP Krško specific and independent of the old NIS study. The module will have the form of a Preliminary Decommissioning Plan (PDP), complying with the IAEA-recommended format and priorities.
2. Elaboration of predisposal and disposal options for RW and SF;
 - predisposal management of RW must be elaborated and optimal solutions proposed,
 - LILW disposal must be reviewed in the light of new developments (particularly in Slovenia); all relevant options should be examined and evaluated;
 - SF management (interim storage as well as disposal) should be developed in greater detail than in the previous iteration of DP.
3. Development and evaluation of integrated DP scenarios:
 - SID-45 should be re-evaluated as the reference scenario for cost comparison, and new variants or alternatives may be investigated;
 - the possibility of the NPP Krško life extension (10 and 20 years) should be introduced in order to facilitate timely decision-making;
 - the possibility of diverging interests of the contracting parties should also be analyzed in time to make rational decisions on further development of DP (e.g. waste division and separate waste management).

3. Description of Current Status

SID-45 scenarios (with disposal and with export of SF) foresee that the LILW repository will be built at the latest by 2018, will operate until 2037 and will be closed in 2042. The decommissioning activities will begin immediately after the NPP shut down in 2023 and will be completed by 2036. In both scenarios, just after the end of NPP's life time in 2023, dry storage of spent fuel for 45 years is introduced. The decision on the export or on disposal of spent fuel has to be taken at the latest by 2030, which leaves sufficient time to develop the SF repository solution before 2065. The scenarios are structurally quite similar, with almost identical discounted expenses which allow simple switching from one scenario to the other for several decades from now. Furthermore, dry storage allows simple adjustments on time scale (e.g. opening of SF repository several years later than planned, or changes in schedule of SF export) that will not significantly influence financial plan.

Based on SID-45 scenarios, it was recommended that in the period from the beginning of 2004 until the next cost estimate in the following revision of the NPP Krško Decommissioning Program, the basis for collecting financial resources into the decommissioning funds in Croatia and Slovenia should be total discounted cost of DP (discounted as of 2002) in the rounded amount of 350 million €. The corresponding amount of each of 19 equal yearly installments (deposited from 2004 through 2022) is 28.5 million €, calculated for one joint fund assumed empty at the beginning of 2004.

However, the Program from 2004 was prepared under time pressure, so that some important aspects of decommissioning and waste disposal were not sufficiently elaborated, and respective cost estimates contain high uncertainties. Therefore, the Revision 2 of DP is expected to be prepared more thoroughly to significantly reduce the margins of uncertainty and introduce more consistent contingencies in cost estimates. In addition to technical refinements, new circumstances in both countries as well as the changes in financial parameters should be considered.

General guidelines for improvement of DP in the Revision 2 are given in the recommendations of the 1st iteration, and in the recommendations of the EDF review. The most important guidelines were further elaborated during the IAEA expert mission in October 2005, which was organized within the IAEA regional project on "Support to decommissioning of NPP's" aimed to help the preparation of the decommissioning programs in the eastern and middle Europe countries. Recommendations of the mission are given in the Appendix.

4. Project Scope and Content

The scope of the Revision 2 of DP is generally determined by the requirement that it should substantially improve the areas that were not sufficiently or adequately elaborated in the 1st iteration. More specific requirements are outlined by the project purpose and objectives.

Boundary conditions for this revision of DP, prepared by the PT, are submitted to the stakeholders as a part of this ToR. Previous DP iteration contained also so called detailed (technical) boundary conditions which were mainly of concern for the experts and did not require scrupulous general attention. In this revision they will be treated as technical assumptions for specific modules.

The project will be roughly divided in two phases:

A) In the first phase, preliminary analyses of circumstances and basic technological studies will be prepared:

I. Decommissioning module of the 1st iteration will be replaced by the NPP Krsko specific **Preliminary Decommissioning Plan (PDP)** including Decommissioning Inventory, which will follow the structure proposed by the IAEA expert mission recommendation from October 2005 (cited in the Appendix). Due to the time limitations, for this DP revision emphasis should be given to the following elements of PDP:

- site specific **decommissioning inventory** development with database structure and pre-decommissioning characterization,
- selection of the decontamination and decommissioning techniques for NPP Krško,
- resulting materials streams (free release, primary and secondary waste, reuse),
- and the list of investments needed to complete decommissioning safely with new costs estimations.

This PDP should not be limited only to cost estimate purposes, but it should be a first step towards the actual decommissioning Plan. Therefore it must be transparent (all results must be supported by presentation of assumptions, models and methods of calculation) to enable successive improvements.

II. Update of LILW disposal project will take into account new developments in Slovenia (siting process and time schedule, proposed designs of facility, requirements for the waste acceptance criteria establishment) as well as the consequences of potential NPP life extension.

- III. Analysis of RW and SF predisposal options** will address specific needs of waste management before disposal, separately and in potential combinations.
- i) The RW issues may include clearance levels, reuse, potential need for treatment, management of large components and storage or long term storage before the start (or during temporary pause) of repository operation.
 - ii) For SF different options of storage including the option of long term storage will be investigated and the optimal solution will be recommended. Predisposal management of HLW will also be addressed.
- IV. Upgrade of SF disposal project** must also provide improved disposal reference scenario and more reliable cost estimates for SF disposal.

B) In the second phase of the project, integrated DP scenarios will be formulated and evaluated, their costs calculated, and recommendations for DP financing and further development proposed:

- **Development of the integrated DP scenarios** will mainly be determined by the principal boundary conditions. Their finer details will primarily depend on the PDP results, the analysis of RW and SF predisposal options and on the disposal projects update.
- **Scenario evaluation with recommendations** is the final step in DP revision. It must compare the analyzed scenarios taking into account both their feasibility and estimated costs. The recommendations will include financing models and specify the needs for most important improvements.

5. Project Organization, Time Schedule and Requirements

The Revision 2 of DP will be prepared according to the requirements of the intergovernmental *Agreement* on the NPP Krško, under supervision and pending approval by the principal stakeholders, which are the contracting parties (i.e. the governments) and the NPP owners (i.e. the respective power companies).

As in the previous iteration, operative realization of the project is entrusted to the Project team jointly formed by ARAO and APO, whose members are Nadja Železnik, Irena Mele and third member to be named (ARAO) and Vladimir Lokner, Ivica Levanat, Andrea Rapić (APO). Members from ARAO and APO interchange on the post of the Project team leader, each being in charge for one half of the course of the project.

For supervising the activities and resolving the issues raised by the Project team, Advisory board, consisting of the representatives of both owners and other relevant experts will be nominated as in the previous DP iteration.

NPP Krško will carry out the PDP preparation according to specifications given in section A)I. of the chapter 4 of this ToR. It will be completed by the end of May 2009.

Consulting firms from Croatia, Slovenia and/or other countries, as well as experts from the IAEA, will be engaged for particular specialized tasks in preparation of this DP revision, as needed and available.

The project activities, defined in the chapter 4 of this ToR, will be carried out in 16 months according to the time schedule below. Following table is qualitative in nature. It uses arbitrary division of time in 3 periods in order to simplify management of project. Main purpose of the table is to demonstrate that most of the activities should be performed in parallel. Activities will be executed with separate terms of references that will plan activities precisely.

In other present financing requirements more compactly in the subsequent tables the entire project duration is divided in 3 approximately equal periods (of 5-6 months each).

Activity	Period 1					Period 2					Period 3						
	Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TOR for the Revision 2 of DP	■																
New boundary conditions	■																
Analysis of RW and SF predisposal options		■	■	■	■	■	■	■	■	■	■						
PDP including Decommissioning inventory		■	■	■	■	■	■	■	■								
Update of LILW disposal project				■	■	■	■	■	■	■							
Upgrade of SF disposal project					■	■	■	■	■	■	■						
Development of the integrated DP scenarios								■	■	■	■	■	■	■			
Scenario evaluation and recommendations and drafting of DP Document									■	■	■	■	■	■	■	■	
AB review of DP																	■

Financing requirements for the project during the Revision 2 were estimated based on the experience in the previous Program iteration and preliminary cost assessments from IAEA experts. Project is divided into several activities, which are listed (and numbered from 1 to 14) in the table 1 below. Four of these activities (additionally numerated from I to IV) are major subprojects for which the PT will need extensive assistance/engagement of specialized expert organizations, and they are described in more details in the table 2 below.

The Project team is responsible for planning and management of all activities, and for preparation of the integrated document of the 2nd Program revision. The Team will

- analyze current options for NPP Krško decommissioning and RW/SF management, and define boundary conditions in consultations with the Advisory board;
- define the requirements on and supervise the realization of the four subprojects;
- define and analyze integrated scenarios of decommissioning and RW/SF management, implementing the results of the subprojects;
- calculate the overall scenario costs and model the financing for the national decommissioning funds; and
- propose the reference scenario of the 2nd Program revision and recommend the areas of improvement for the next iteration.

The Project team will look for expert organizations which can realize the subprojects and other specific activities of this revision with the explicit intention to engage Slovenian and Croatian companies as much as possible, including ARAO and APO, and in particular the NPP Krško. However, for some expert tasks it will be necessary to engage specific experienced organizations from abroad (which is in the tables below referred to as outsourcing). Potential engagement of expert organizations (besides ARAO, APO and NPP Krško) in major specific activities may include:

- An expert company for the analysis of clearance levels.
- An experienced company for the predisposal LILW management.
- A foreign specialized company selected by and in co-operation with the NPP Krško, for the physical and radiological decommissioning inventory.
- A foreign specialized company in co-operation with the NPP Krško, for D&D techniques, waste streams and cost estimates.
- An experienced foreign company to investigate SF storage options.
- Limited assistance of foreign experts for the SF disposal project upgrade.
- An experienced foreign company, appointed by the governments, for the official review of the Program.

In the columns of the tables below, the estimates in person months are specified in three groups: project planning and management refers to the activities of the Project team; specific activities including outsourcing refer to realization of the four subprojects and other activities requiring engagement of expert organizations; and other costs are mostly related to traveling expenses, material costs and cost of documents translation.

Table 1

		APO&ARAO -- project management + preparatory works (person/months)			Specific activities including outsourcing (person/months)			Other costs (person/months)			Overall costs			Sum	Contingency 5%	Total costs per task	
		phase			phase			phase			phase						
		1	2	3	1	2	3	1	2	3	1	2	3				
Activity	1	TOR for the Revision 2 of DP	1,000			0,125			0,125			1,250	0,000	0,000	1,25	0,06	1,31
	2	New boundary conditions	1,000						0,125			1,125	0,000	0,000	1,13	0,06	1,18
	3	I Preliminary Decommissioning Plan (PDP) including Decommissioning inventory	1,125	4,000	1,000	8,000	18,000	3,000	0,250	0,625	0,250	9,375	22,625	4,250	36,25	1,81	38,06
	4	II Update of LILW Disposal Project	0,000	0,375	0,500	1,000	6,000	2,000	0,000	0,375	0,250	1,000	6,750	2,750	10,50	0,53	11,03
	5	III Analysis of RW and SF predisposal options	0,500	1,500	0,500	4,000	6,000	3,000	0,250	0,375	0,125	4,750	7,875	3,625	16,25	0,81	17,06
	6	IV Upgrade of SF Disposal Project	0,000	1,750	0,000	0,000	10,000	0,000	0,000	0,500	0,000	0,000	12,250	0,000	12,25	0,61	12,86
	7	Definition of the integrated scenarios			1,000						0,250	0,000	0,000	1,250	1,25	0,06	1,31
	8	Scenario evaluation&cost estimate		1,000	2,000						0,250	0,000	1,000	2,250	3,25	0,16	3,41
	9	DP drafting		1,000	3,000		0,500	2,000			0,125	0,000	1,500	5,125	6,63	0,33	6,96
	10	Advisory board review			0,250			3,000				0,000	0,000	3,250	3,25	0,16	3,41
	11	Final DP version			0,750			0,125			0,125	0,000	0,000	1,000	1,00	0,05	1,05
	12	CRO/SLO approval and adoption of DP			0,125			1,000				0,000	0,000	1,125	1,13	0,06	1,18
			3,625	9,625	9,125	13,125	40,500	14,125	0,750	1,875	1,375	17,50	52,00	24,63	94,13	4,71	98,83

Total costs	98,83	person/months	mngmnt+prep	activities	other costs
Value of person/month	10.000	€			
Total costs	988.313	€	24%	72%	4%

Table 2

	Preliminary Decommissioning Plan (PDP) including Decommissioning inventory	APO&ARAO -- project management + preparatory works (person/months)			Specific activities including outsourcing (person/months)			Other costs (person/months)		
		phase			phase			phase		
		1	2	3	1	2	3	1	2	3
I	TOR for Inventory	0,500						0,250		
	Site specific inventory for decomm. Database	0,250	1,500		7,000	5,000			0,125	
	D&D techniques	0,250	0,250		1,000	3,000			0,125	
	D&D mterial and waste management	0,125	0,750			3,000			0,125	
	Investment plan		0,750			5,000			0,125	
	PDP document		0,750			2,000			0,125	
				1,000			3,000			0,250
		1,125	4,000	1,000	8,000	18,000	3,000	0,250	0,625	0,250
	Total costs						36,25 person/months			
II	Update of LILW Disposal Project	APO&ARAO -- project management + preparatory works (person/months)			Specific activities including outsourcing (person/months)			Other costs (person/months)		
		phase			phase			phase		
		1	2	3	1	2	3	1	2	3
			0,125			1,000			0,125	
			0,125			2,000			0,125	
			0,125		1,000	3,000			0,125	
				0,500			2,000			0,250
			0,000	0,375	0,500	1,000	6,000	2,000	0,000	0,375
	Total costs						10,50 person/months			
III	Analysis of RW and SF predisposal options	APO&ARAO -- project management + preparatory works (person/months)			Specific activities including outsourcing (person/months)			Other costs (person/months)		
		phase			phase			phase		
		1	2	3	1	2	3	1	2	3
		0,500			4,000					
			0,500						0,125	
			0,500			2,000		0,250	0,125	
			0,250			1,000			0,125	
			0,250	0,250		3,000	2,000			0,125
	0,500	1,500	0,500	4,000	6,000	3,000	0,250	0,375	0,125	
	Total costs						16,25 person/months			
IV	Upgrade of SF Disposal Project	APO&ARAO -- project management + preparatory works (person/months)			Specific activities including outsourcing (person/months)			Other costs (person/months)		
		phase			phase			phase		
		1	2	3	1	2	3	1	2	3
			0,250							
			0,500			5,000			0,250	
			0,500			3,000			0,125	
			0,500			2,000			0,125	
			0,000	1,750	0,000	0,000	10,000	0,000	0,000	0,500
	Total costs						12,25 person/months			

6. Project Results and Verification

The result of the project will be the new revision of DP. The document describing new DP will have the modular structure similar to that of the previous DP iteration. All source studies (generated in the phase A) will be contained in the appendices.

DP document will be prepared in English, as the most suitable language for participation of foreign experts and for peer review.

DP will be completed by PT before 12 December 2009 and reviewed by AB before 24 December 2009. Source studies will be submitted to AB as soon as they are completed for their review and comments.

Preparation of the project will be continuously verified through interaction with the principal stakeholders and by IAEA-supported workshops. The final verification of the results will be provided by an official peer review.

7. General References

- Program of NPP Krško Decommissioning and SF & LILW Disposal (Decommissioning Program, DP) (2004)
- IAEA expert mission recommendation, October 2005 (in the IAEA regional project: Support to decommissioning of NPP's)
- Review of the program for the decommissioning of NPP KRSKO and disposal of low and intermediate level waste and spent fuel, CIDEN EL I TD / 04 00204, EDF 2004
- Agreement between the governments of Republic of Slovenia & Republic of Croatia on settlement of status and other legal relations connected with financing NPP Krško, its exploitation and decommissioning.
- Preliminary Report on Phase 1 of the Project – Defining the Program for NEK Decommissioning and Specifying the Terms of Reference for the Revised Decommissioning.
- Technical Specification SP-ES 209 – Decommissioning Plan for the Nuclear Power Plant Krško, R1
- Ionizing Radiation Protection Act and Nuclear Safety Act (Ur. L. RS 676-3234/2002), Act amending the Ionizing Radiation Protection and Nuclear Safety Act (Ur. L. RS 24/03)

8. Appendix

8.1. IAEA expert mission recommendation, October 2005

A. The priority has to be given to decommissioning scenarios which are the less sensitive to external constraints (e.g.: scenarios including the export of spent fuel and/or the use of a multi-regional disposal site for radioactive waste should not be part of the reference scenario for the definition of a funding mechanism although should be also analyzed), are plausible and feasible. As a consequence, scenarios SID-96 and SID-15 should be eliminated. **Immediate decommissioning strategy, called SID-45 with disposal, should be worked out with priority. As an alternative to the reference scenario starting in 2023, a similar scenario based on the extension of the operational lifetime of the Krško NPP should also be studied.**

B. A Preliminary Decommissioning Plan (PDP) according to the IAEA recommendations and to the best practices should be developed for site specific cost estimates. It is proposed to be developed at least by the end of 2008 and should replace previous decommissioning related documents; namely NIS study and corresponding module 5.

The following structure of **the PDP in 15 chapters according to the IAEA standards** is proposed:

1. **Introduction**, defining main objectives, scope of the PDP and goals to be achieved, providing a description of the legal and regulatory framework and presenting the main assumptions and boundary conditions;
2. **Description of the facility** with details on nuclear reactor, the site and surrounding area that could affect and be affected by decommissioning and life history of nuclear reactor;
3. **Inventory**, providing a detailed description of the amount, the type and location of radioactive and toxic non-radioactive materials and wastes in the nuclear installation and methods and measurements used to determine the inventory;
4. **Decommissioning and dismantling (D&D) project organization**, describing the structure of the decommissioning organization, including experience, resources, responsibilities, technical qualifications and skills of the staff, providing review and monitoring arrangements, training and qualification, reporting and records;
5. **Decommissioning strategy**, providing objectives and decommissioning alternatives and selection and justification of the preferred option;

6. **Maintenance description**, analyzing technical means and safety measures required for a safe dismantling during and between the decommissioning phases until the release of the site;
 7. **D&D techniques**, describing availability of special services, engineering and decommissioning techniques required, including any decontamination, dismantling and cutting technology as well as remotely operated equipment needed to complete decommissioning safely;
 8. **D&D material and waste management**, describing waste management practices, including identification and characterization of sources, types and volumes of waste, criteria for segregating materials, proposed treatment, conditioning, transport, storage and disposal methods, the potential to reuse and recycle materials, and related criteria, and anticipated discharges of radioactive and hazardous non-radioactive materials to the environment;
 9. **Investment plan**, providing the list of all investments needed to complete decommissioning safely;
 10. **R&D programme** with planned research and development activities needed to complete decommissioning successfully;
 11. **Safety file**, providing safety assessments and environmental impact assessment, including the radiological and non-radiological hazards to workers, the public and the environment with proposed radiation protection procedures, the proposed environmental monitoring program, a description of the monitoring program, equipment and methods to be used to verify that site will comply with the release criteria;
 12. **QA program** with description of the quality assurance program;
 13. **Planning**, describing proposed decommissioning activities, including time schedules;
 14. **Costs and financing**, giving details of the estimated cost of decommissioning, including waste management, dismantling and decontamination activities, final survey demonstrating compliance with the regulatory body guidelines for site license termination, the source of funds required to carry out the work and procedure applied to check the adequacy of the provision versus cost estimate.
 15. **D&D report**, describing the record keeping organization during the decommissioning.
- C. **Modules concerning LILW (Module 3) and SF management (Module 4) should be revised** as new developments arise, what is especially true for the development of the LILW repository where in Slovenia site selection is under way with already field investigations of several potential locations in place. Work towards developing a LILW repository is ongoing and possibilities are available to accurately determine costs based

on current research, programs and other parallel documentations. The SF management should be reviewed and reference scenario with elaboration of the geological repository further developed.

- D. **Preparation of new revision of the Program** of NPP Krško decommissioning and SF&LILW disposal according to the findings of the PDP and incorporating new developments in the other modules (LILW and SF management).

8.2. Boundary Conditions

This proposal of boundary conditions reflects the present insight in the project planning. The experience from the previous Program revision indicates that during project realization they may need to be modified, according to the results of particular Program modules or other developments. It is understood that such modifications should be approved through a similar procedure as this proposal.

General Boundary Conditions	
1.	<p>The Program will develop and evaluate scenarios based on two options of the NPP Krško (NEK) operation:</p> <ul style="list-style-type: none"> a) as presently planned, until the year 2023, b) with lifetime extension until 2043. <p>Recommended financing requirements (including annual installments to the national decommissioning funds) in this revision will still be based on the option a), without NEK lifetime extension.</p> <p>It is assumed that there will be no major accidents in the rest of the plant operation, but the possibility shall be listed in the risk register.</p>
2.	<p>The legal framework for this Program will consist of (in the order listed):</p> <ul style="list-style-type: none"> a) EU regulations and recommendations, b) international agreements and conventions, BSS, and IAEA recommendations, a) state legislation in Slovenia and Croatia, as applicable to particular processes and facilities.
3.	<p>All costs will be expressed in € 2008 (the end of the year is assumed, in order to maintain correspondence with the annuities calculated in the previous revision of the Program).</p> <p>Costs of all items will be expressed in two variants:</p> <ul style="list-style-type: none"> a) with no taxes, b) with VAT added (as a reference Slovenian VAT will be used).
4.	<p>Final financial estimates of the integrated Program scenarios will be described as:</p> <ul style="list-style-type: none"> a) nominal cost estimates (without discounting) with time schedule for all costs; b) costs discounted as of the year 2008; c) revised annual installments to the national decommissioning funds, to be paid at the end of the year, assuming that the newly calculated installments will be paid to

	the fund from 2009 until 2022.
5.	Discount rate will be based on appropriate statistical data and reviewed by leading expert institutions in Slovenia and/or Croatia. Results for the OECD-recommended discount rate of 2% will be presented in the sensitivity analysis.
Boundary Conditions for NEK Decommissioning	
1.	The Program will analyze only the option of prompt dismantling, which begins immediately after NEK shut-down and should be completed (together with site restoration) in about 15 years. This option was named Strategy of Immediate Dismantling (SID) in the previous revision.
2.	The Program will analyze integrated scenarios of NEK dismantling and RW and SF management, including: <ul style="list-style-type: none"> a) re-evaluation of the reference scenario SID-45 from the previous revision (the number "45" refers to the entire scenario duration, including SF disposal), b) a similar scenario for the case of NEK lifetime extension. Other scenarios may be introduced based on the analysis of RW and SF predisposal and disposal options.
Boundary Conditions for LILW Management	
1.	The Program will re-evaluate and update the near-surface LILW repository option, based on most recent data and selected repository type from the Slovenian repository project. If the selection of repository type is delayed, a conservative approach is used. A standard surface vault-type repository should be re-examined in the sensitivity analysis. Other technologies of LILW disposal will be noted in the risk register.
2.	The Program will assume one repository for all LILW from NEK. The option of the second LILW repository shall be included in the risk register. Additional more specific boundary condition regarding repository site, ownership and management may be provided/ considered during the preparation of this revision.
3.	Various reasonable options of LILW repository operation schedule, depending also on the NEK life extension (i.e. repository operation in 2013, 2018, and other) will be considered.
4.	Options of predisposal LILW management will be analyzed.
5.	Costs of management of LILW from NEK will be considered independently of any potential management of RW from other sources. Financial compensations to local communities will be included.
6.	Cost of institutional control after the repository closure will be estimated based on international recommendations.
Boundary Conditions for SF Management	
1.	For purpose of costs estimates, the Program will refine and re-evaluate the geological SF repository project from the previous revision. Start of geological repository operation will consider the necessary SF cooling period.
2.	The impact of the NEK lifetime extension option will also be analyzed. In sensitivity analysis an option of disposal after long-term storage (up to 100 years) will also be analyzed.

3.	The alternative options of disposal in third countries or permanent export of SF will not be re-evaluated in this revision as there are no new data. These options will remain on the list of potential future options for consideration.
4.	Predisposal SF management needs and options will be analyzed more thoroughly than in previous Program revision, taking also into account the possibility of NEK life extension. In addition to dry storage in CASTOR or similar containers, other options will also be considered.