Special nuclear project fiche

1. BASIC INFORMATION

1.1 CRIS number: 017-519.01.03

1.2 Title: Completion of the upgrading programme for the Novi Han repository

1.3 Sector: IN & EN

1.4 Location: Bulgaria

2. OBJECTIVES

2.1 Overall Objective:
To improve safety of radioactive waste management and disposal in Bulgaria

2.2 Project purpose:
To improve management of institutional radioactive waste at the Novi Han repository

2.3 Accession Partnership and NPAA priority
This proposal is in accordance with the national Strategy for Spent Fuel and Radioactive Waste Management (accepted by Council of Ministers on December 23, 2004) where one of the objectives is the completion of the upgrading programme for the Novi Han repository.

2.4 Contribution to National Development Plan
N/A

2.5 Cross Border Impact
N/A

3. DESCRIPTION

3.1 Background and justification
The Novi Han repository is the main facility for the management of institutional radioactive waste in Bulgaria. This facility does not comply with current safety requirements for storage/disposal of radioactive waste. As a consequence the Bulgarian National Regulatory Agency (NRA) temporarily stopped disposal operations in 1994. This situation led to several inquiries and assessment studies carried out by international experts who concluded that an upgrading of the Novi Han facility is necessary in order to meet the current national standards and
guidelines for repositories and thereby to get an operational licence from NRA for the long-term storage of institutional radioactive waste.

Although a number of safety and security measures have already been implemented, notably through support from the Phare nuclear safety programme over the years 2001-2004, the upgrading programme has not yet been completed. Buildings for waste treatment and conditioning need specific equipment.

At present the design of the buildings that will be constructed and/or being refurbished for the characterisation, treatment, conditioning, packaging and storage operations for institutional radioactive waste comprises the following compartments:

- compartment for conditioning of high activity sealed radioactive sources (SRS);
- compartment for treatment and conditioning of special SRS, which contain long-lived alpha emitters and neutron sources;
- compartment for treatment and conditioning of special SRS, which contain gaseous radionuclides ($^3$H, $^{85}$Kr, $^{222}$Rn)
- compartment for conditioning of low and intermediate level short-lived SRS;
- compartment for treatment and conditioning of solid waste;
- compartment for treatment and conditioning of liquid waste;
- compartment for storage of conditioned high activity SRS
- compartment for storage of conditioned low and intermediate level short-lived and long-lived waste.

**Linked activities**

The management of radioactive waste in Bulgaria has been supported through Phare program -BG9107-02-04-01 “Management of radioactive waste in Bulgaria”, BG9809-02-01 “Support for the establishment of a state body for Radioactive Waste Management (RWM) and to the activities of the RWM Fund” with assessment of the radioactive waste management scheme and proposal for improvement of the institutional framework and upgrading of Novi Han Repository.

The project is the logical continuation of the foregoing projects programmed in 2002-2004 concerning the upgrading of the Novi Han repository. The interaction between this project proposal and the running projects is illustrated in the following timetable.

It must be underlined that this project proposal will complete the upgrading programme of the Novi Han repository and thereby will allow the licensing of the facility by NRA for the management and long-term storage of institutional radioactive waste in Bulgaria.
Time table: Logical sequence and interrelation between the projects

<table>
<thead>
<tr>
<th>Projects and activities</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>1. Phare 2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Development of technical design</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>- Safety assessment</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>- Tender documentation for Works</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>- Cost analyses, technical specification equipment</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>2. Phare 2004 - Civil Construction work</td>
<td></td>
<td></td>
<td></td>
<td>x x x x x x x x x</td>
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<tr>
<td>3. Current proposal - Delivery of equipment and documentation development</td>
<td></td>
<td></td>
<td>x x x x x x x x x</td>
<td></td>
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</tbody>
</table>

3.2 Results

- Completion of the upgrading programme for the Novi Han repository
- Fulfilment of the IAEA safety standards and requirements
- Preparation of the safety report for the licensing of the Novi Han facility for long-term storage

3.3 Activities

- Supply of special equipment for waste processing plant and storage facility at Novi Han Repository:
  - equipment for treatment of low and intermediate level liquid waste;
  - equipment for conditioning of liquid waste;
  - equipment for volume reduction of solid waste;
  - equipment for dismantling of low and intermediate level beta/gamma sealed sources;
  - equipment for dismantling of long-lived sealed sources and sources that contain fissile materials;
  - equipment for dismantling of gamma irradiator units;
  - equipment for decontamination;
  - equipment for conditioning of low and intermediate level beta/gamma sealed sources;
  - equipment for conditioning of long-lived sealed sources and sources that contain fissile materials;
  - equipment for conditioning of powerful sealed sources;
  - equipment for control of the conditioned waste;
  - Visual control and monitoring equipment.

The list of equipment to be supplied within the project proposal will derive from the implementation of the 2002 Phare project (2002/632.01.01) that should be completed by October 2005.
• Installation, testing and commissioning of the equipment
• Training of the Novi Han Repository personnel
• Development of documentation for waste processing plant and storage facility (manuals, full technological description, detailed technological procedures and detailed operational instructions)

4. Institutional Framework

The project would support the State Enterprise “Radioactive Waste”. According to the Act on Safety of Nuclear Energy SERAW is responsible for the management of radioactive waste. This includes:

• Establishment of the National Repository for Low and Intermediate Level Waste;
• Operation of the Novi Han repository;
• Operation of the waste processing and storage facilities at NPP Kozloduy site.

The organisational structure of the SERAW and the responsibilities are as follows:

• Headquarter responsible for management of all the activities and implementation of the National Repository project;
• Special division responsible for operation of waste processing and storage facilities at NPP Kozloduy site
• Special division responsible for operation of waste management facilities at Novi Han Repository site, including transportation of institutional waste from the generators.

Currently the operator of Novi Han Repository is the Institute for Nuclear Research and Nuclear Energy. The State Enterprise “Radioactive Waste” is in procedure to take over the responsibility for operation of Novi Han Repository.

5. Detailed Budget

<table>
<thead>
<tr>
<th></th>
<th>Phare/Pre-Accession Instrument support</th>
<th>Co-financing</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>National Public Funds</td>
<td>Other Sources (**)</td>
</tr>
<tr>
<td>€M</td>
<td></td>
<td>(*)</td>
<td>(***)</td>
</tr>
<tr>
<td>Year 2005 - Investment support jointly co funded</td>
<td>2,325</td>
<td>0,775</td>
<td>NA</td>
</tr>
<tr>
<td>Sub-project 1</td>
<td>2,325</td>
<td>0,775</td>
<td>NA</td>
</tr>
<tr>
<td>Investment support – sub-total</td>
<td>2,325</td>
<td>0,775</td>
<td>NA</td>
</tr>
<tr>
<td>% of total public funds</td>
<td>max 75 %</td>
<td>min 25 %</td>
<td></td>
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<tr>
<td>------------------------</td>
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<td></td>
</tr>
</tbody>
</table>

In case of parallel co-funding (per exception to the normal rule, see special condition as indicated below:

<table>
<thead>
<tr>
<th>Year 2005 - Investment support co-funded in parallel</th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-project 1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Investment support – sub-total</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>% of total public funds</td>
<td>max 75 %</td>
<td>min 25 %</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2005 Institution Building support</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-project 1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>IB support</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total project 2005</td>
<td>2,325</td>
<td>0,775</td>
<td>NA</td>
<td>0,775</td>
<td>3,1</td>
</tr>
</tbody>
</table>

6. Implementation Arrangements

The decentralised implementation scheme (DIS) with ex-ante Commission control will be followed for the project. The CFCU will be the Agency responsible for implementing the Project:

6.1 Implementation Agency

The Implementing Agency for this project will be the Central Finance and Contracts Unit (CFCU) at the Ministry of Finance. The CFCU will be responsible for the tendering, contracting and payment activities under the project.

Contact details:
Mr. Vladimir Valchev
CFCU Director
102, Rakovski str., 1040 Sofia, Bulgaria
Tel.: +359 2 9859 2772, 359 2 9859 2777
Fax: +359 2 9859 2773

Programme Authorising Officer (PAO):
Mr. Tencho Popov
Secretary General of the Ministry of Finance
6.2 Beneficiary:
State Enterprise Radioactive Waste
Contact person:
Ms. Ira Stefanova
Novi Han Repository
Tel: +359 2 975 10 94, +359 2 974 3543
Fax: +359 975 10 29, +359 975 36 19
e-mail: irast@inrne.bas.bg
The Beneficiary will be responsible for preparation of Terms of Reference for the contract under the project.

6.3. Project monitoring
The Ministry of Energy shall provide project monitoring.
Contact person:
Nikolay Lambev
Tel./Fax: +359 2 988 56 88
E-mail: nlambev@doe.bg

6.4 Twinning: not applicable

6.5 Non-standard aspects: not applicable

6.6 Contract
One PHARE contract for supply and documentation development

6 Implementation Schedule

6.2 Start of tendering/call for proposals
February 2006.
6.3 Start of project activity
October 2006.
7.3 Project Completion
September 2008.

7 Equal Opportunity

Equal participation in the project by women and men will be assured.

8 Environment
N/A

9 Rates of return
N/A

10 Investment criteria
N/A
11 Conditionality and sequencing

The main conditionality is timely implementation of the Phare project 2002/632.01.01 on development of detailed design of waste processing and storage facility and the related regulatory permits for design and construction of the facility e.g. delay in construction works for the facilities.
ANNEXES TO PROJECT FICHE

1. Logical framework matrix in standard format
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter for full duration of programme
### Phare log frame

#### LOGFRAME MATRIX for Project

**Program name and number**

<table>
<thead>
<tr>
<th>Contracting period expires</th>
<th>Disbursement period expires:</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 November 2007</td>
<td>30 November 2008</td>
</tr>
<tr>
<td>Total Budget 3,1 MEuro</td>
<td>Phare Budget 2,325 MEuro</td>
</tr>
</tbody>
</table>

**Delivery of equipment and documentation development for waste processing plant and storage facility for Novi Han Repository**

<table>
<thead>
<tr>
<th>Overall Objective</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
</table>
| To improve safety of radioactive waste management and disposal in Bulgaria | Approval graded by NRA for disposal of conditioned institutional waste in the National Repository through approval of the technical design of the National Repository | Reports of the State Enterprise Radioactive Waste
Regular National Reports on fulfillment of the obligations on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of RAW Management | Delay of the implementation of 2002/632.01.01 project
Delay of construction permit |

<table>
<thead>
<tr>
<th>Project purpose</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
</table>
| To improve management of institutional radioactive waste at Novi Han Repository | Increase of the number of the accepted radioactive waste in Novi Han Repository:
- from 4 - 5 to at least 25 high activity sealed sources per year
- from 3 – 4 to at least 20 neutron sources per year
- from 1 – 2.10³ sealed radiation sources to 5 - 6.10³ per year
- from 5 - 10 m³ solid waste to at least 50 - 100 m³ per year
- from 2 - 3 m³ liquid waste to at least 50 m³ per year | Reports of the State Enterprise Radioactive Waste
Reports of NRA
Regular National Reports on fulfillment of the obligations on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of RAW Management | Delay of construction permit |
<table>
<thead>
<tr>
<th>Results of Projects</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improvement of the radioactive waste management</td>
<td>Approval granted by NRA for commissioning of the waste processing plant and storage</td>
<td>Reports of NRA</td>
<td></td>
</tr>
<tr>
<td>• Fulfilment of the IAEA safety standards and requirements</td>
<td>Approval of the updated SAR, which included the results of the commissioning program</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities</th>
<th></th>
</tr>
</thead>
</table>
| • Supply of special equipment for waste processing plant and storage facility at Novi Han Repository: | - equipment for treatment of low and intermediate level liquid waste;  
- equipment for conditioning of liquid waste;  
- equipment for volume reduction of solid waste;  
- equipment for dismantling of low and intermediate level beta/gamma sealed sources;  
- equipment for dismantling of long-lived sealed sources and sources that contain fissile materials;  
- equipment for dismantling of gamma irradiator units;  
- equipment for decontamination;  
- equipment for conditioning of low and intermediate level beta/gamma sealed sources;  
- equipment for conditioning of long-lived sealed sources and sources that contain fissile materials;  
- equipment for conditioning of powerful sealed sources;  
- equipment for control of the conditioned waste;  
- Visual control and monitoring equipment.                                                                                                       | Proper organization of the interfaces between the construction work for waste processing plant and storage facility made within the construction work project.  
Early submission of detailed technical description of the equipment made by the supplier.                      |
<p>| • Installation, testing and commissioning of the equipment                                    |                                                                                                                                                                                                 |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Training of the Novi Han Repository personnel</td>
<td></td>
</tr>
<tr>
<td>Development of documentation for waste processing plant and storage facility (manuals, full technological description, detailed technological procedures and detailed operational instructions)</td>
<td></td>
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</tbody>
</table>
# Implementation Plan of the Programme

**Programme Title:** Delivery of equipment and documentation development for waste processing plant and storage facility for Novi Han Repository

<table>
<thead>
<tr>
<th>Project</th>
<th>Implementation Schedule</th>
<th>Budget Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>2005</strong></td>
<td><strong>2006</strong></td>
</tr>
<tr>
<td>Project I</td>
<td>IV</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Total Programme</td>
<td></td>
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</tbody>
</table>

**Legend:**

- **D** = design of sub-projects (ToR evaluation).
- **C** = tendering and contracting.
- **I** = contract implementation and payment.

Date of Drafting: 15.03.05
Planning Period: 2006-2008

Programme number: Document
Strategic Plan: Section
Version: D
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Contract 1</td>
<td>Contracted</td>
<td>3,100</td>
<td>3,100</td>
<td>3,100</td>
<td>3,100</td>
<td>3,100</td>
<td>3,100</td>
<td>3,100</td>
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<tr>
<td></td>
<td>Disbursed</td>
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<td>2,790</td>
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