Special nuclear project fiche

1. BASIC INFORMATION

1.1 CRIS Number: 2004/016-815.01.06

1.2 Title: CIVIL CONSTRUCTION WORKS FOR ESTABLISHMENT OF RADIOACTIVE WASTE PROCESSING PLANT AND STORAGE FACILITY FOR NOVI HAN REPOSITORY

1.3 Sector: 23064

1.4 Location: Bulgaria

2. OBJECTIVES

2.1 Overall Objective:
To improve management of institutional radioactive waste at Novi Han Repository

2.2 Project purpose:
Implementation of civil construction works for erecting two buildings for waste processing and storage of conditioned waste;

Construction of the buildings with the related general electricity, water, sewage, heating, ventilation, air conditioning (HVAC) installations.

2.3 Accession Partnership and NPAA priority

The Accession Partnership 2003, states that it is necessary to continue to implement the recommendations contained in the 2001 Council report on 'Nuclear Safety in the Context of Enlargement' and its subsequent Peer Review States Report of June 2002, with due regards to priorities assigned in the reports. These recommendations underline that Candidate Countries should pay particular attention to the "development of national strategies for the long-term management of spent fuel and radioactive waste, including appropriate schemes for storage or disposal of all types of radioactive waste" that is typically considered as good practices within the EU, when developing and implementing their national programme for the safe management of spent fuel and radioactive waste.

2.4 Contribution to National Development Plan

Management of the radioactive wastes is part of the National programme for environmental protection. The Novi Han Repository is responsible for management and storage of institutional radioactive waste. The planned activities are in compliance with the National strategy on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

3. DESCRIPTION OF THE PROJECT

3.1 Background and justification:
Institutional radioactive waste is currently stored and/or disposed of in the Novi Han facility. 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 enquiries and assessment studies carried out by international experts who concluded that an upgrading of the Novi Han facility must be done in order to meet the current national standards and guidelines for repositories. Although a number of safety and security measures have already been implemented, there is still a need for processing, conditioning and storing institutional radioactive waste in the facility. This is in compliance with the priorities of the National Strategy on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, according to which Novi Han Repository will be transformed into waste processing and storage facility. The proposed waste processing plant will consist of compartments for treatment and conditioning of the wide range of radioactive waste that are accepted at Novi Han Repository:

- compartment for conditioning of high activity sealed radiation sources (SRS); compartment for treatment and conditioning of special SRS, which contain long-lived alpha emitters, fissile materials, neutron sources; compartment for treatment and conditioning of special SRS, which contain gaseous radionuclides ($^6$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;

The storage facility will consist of compartment for storage of conditioned high activity SRS and compartment for storage of conditioned low and intermediate level short-lived and long-lived waste.

Through the civil construction works for establishment of waste processing plant and storage facility for Novi Han Repository the sustainability of the upgrading works at Novi Han can be guaranteed.

### 3.2 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. Under Phare Project 632.01.01/2002 measures are in progress for:

- establishment of laboratory for control and characterising of the incoming raw waste through supply of measurement equipment for Novi Han Repository;
- establishment of hot cell for control and characterising of the incoming powerful sealed sources at Novi Han Repository;
- development of technical design of waste processing and storage facility, including cost analysis, equipment specification and tender documentation for construction of the facility for Novi Han Repository.

The main outcome of the service contract 632.01.01.01 of the Phare project is as follows:

- Detailed technical design for waste processing and storage facilities for subsequent tendering of works and supply, according to the requirements of the “FIDIC- Yellow Book”$^1$,
- Safety assessment for the proposed waste processing and storage facilities,

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$^1$ Conditions of Contract for Plant and Design-Build, Fédération Internationale des Ingénieurs-Conseils (FIDIC); 1999
• Cost analysis and specification of necessary equipment, including bill of quantities,
• Tender documentations for the construction of the waste processing and storage facilities according to the requirements of “FIDIC” and related supervision of construction work.

The above-mentioned project will therefore serve as a basis for the civil construction works for establishment of waste processing plant and storage facility.

3.3 Results:
• Construction of two buildings for waste processing and storage of conditioned waste;
• Provision of the buildings with the related general electricity, water, sewage, HVAC installations.

3.4 Activities:

Component I: Civil construction works for erecting two buildings for waste processing and storage of conditioned waste, provision of the buildings with the related general electricity, water, sewage, HVAC installations, commissioning and testing.

Building 1 for waste processing plant - 4000 m³ (preliminary estimation), including common installations, connection to site systems and area leveling, including:

• Build-in parts of radioactive waste installations (tanks, pipes etc.);
• HVAC equipment;
• Power supply equipment;
• Monitoring equipment;
• Drain system;
• Transport equipment (hoist)
• Support equipment, personnel rooms, etc.

Building 2 for storage of conditioned waste - 2000 m³ (preliminary estimation), including common installations, connection to site systems and area leveling, including:

• HVAC equipment;
• Power supply equipment;
• Transport equipment (hoist)

The project shall secure completion of civil and installation works at level that should allow subsequent delivery and installation of special equipment within separate project.

Component II: Supervision - supervision of the civil construction works in compliance with the Act on Territory Structure (State Gazette of the Republic of Bulgaria, No. 1/2001), according to the relevant standards in the Republic of Bulgaria and the FIDIC regulations.

4. INSTITUTIONAL FRAMEWORK

The project would support the work of the operator of Novi Han Repository, which is responsible for collection, transportation, treatment conditioning, storage and disposal of institutional radioactive waste. Currently the operator of Novi Han Repository is the Institute for Nuclear Research and Nuclear Energy. Novi Han Repository will become part of the State-owned company on radioactive waste management.
The responsible party for the programme is the operator of Novi Han Repository, but the implementation shall be carried out in close coordination with NRA. The Ministry of Energy (managing body of the state fund “Radioactive Waste”) shall provide project monitoring and financial control.

5. DETAILED BUDGET

<table>
<thead>
<tr>
<th>Project components</th>
<th>Investment support</th>
<th>Institutional building</th>
<th>Total Phare (=1+IB)</th>
<th>National Cofinancing</th>
<th>IFI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component I</td>
<td>1,520 MEuro</td>
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<td>1,520 MEuro</td>
<td>0,620 MEuro</td>
<td></td>
<td>2,140 MEuro</td>
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<tr>
<td>Component II</td>
<td></td>
<td>0,150 MEuro</td>
<td>0,150 MEuro</td>
<td>0,050 MEuro</td>
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<td>0,200 MEuro</td>
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<tr>
<td>Total</td>
<td>1,520 MEuro</td>
<td>0,150 MEuro</td>
<td>1,670 MEuro</td>
<td>0,670 MEuro</td>
<td></td>
<td>2,340 MEuro</td>
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</table>

The Beneficiary takes the obligation to cover the cost above 2,340 MEuro, which will appear as output of the feasibility study Phare project 632.01.01.01, through state fund “Radioactive waste”

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: Central Finance and Contracts Unit (CFCU)
Ministry of Finance
102, Rakovski St.
Sofia, Bulgaria
Tel: +359 2 9859 2771
Fax: +359 2 9859 2773
E-mail: cfcu@inet.bg

6.1.1 Beneficiary: Institute for Nuclear Research and Nuclear Energy/State-owned company on radioactive waste management

6.1.2. Contact person: Ms. Ira Stefanova
Novi Han Repository
Tel: + 359 2 975 10 94, + 359 2 9743543
Fax: + 359 975 10 29, + 359 975 36 19
e-mail: irast@inrne.bas.bg

6.2 Twinning: not applicable

6.3 Non-standard aspects: not applicable
6.4 Contract

Two PHARE contracts – Contract 1 for civil construction (works contract) and Contract 2 for supervision (service contract)

7. IMPLEMENTATION SCHEDULE

Implementation schedule is directly related to the implementation schedule of the Phare project 631.01.01, which will give the technical design, preliminary operational safety report, cost estimate and tender documentation for the construction by the end of November 2005.

7.1 Start of tendering/call for proposals

Component I – Civil construction works for erecting of two buildings for waste processing and storage of conditioned waste, provision of the buildings with the related general electricity, water, sewage, HVAC installations, commissioning and testing

January 2006

Component II - Supervision

October 2005

7.2 Start of project activity

Component I - Works, supply of special equipment for waste handling, treatment, conditioning and storage, installation, commissioning and testing, including training of the personnel:

May 2006

Component II - Supervision

March 2006

7.3 Project Completion

Component I - Works, supply of special equipment for waste handling, treatment, conditioning and storage, installation, commissioning and testing, including training of the personnel

April 2007

Component II - Supervision

April 2007

8. ENVIRONMENT

The project shall have positive environment impact effect because of the provision of facilities for controlled storage of radioactive wastes.

9. INVESTMENT CRITERIA

9.1 Catalytic effect:

The investment capabilities of the state fund “Radioactive Waste” are limited due to the initial phase of its operation. Although a lot has been done recently for upgrading of Novi Han Repository, the construction and later on operation of a waste processing and storage facility are important outstanding activities.

9.2 Project readiness

The beneficiary will prepare the ToR based on the outcome of the Phare Project 632.01.01/2002 currently in progress.

9.3 Sustainability
Through the establishment of waste processing plant and storage facility the sustainability of the upgrading works at Novi Han Repository can be guaranteed.

9.4 Compliance with state aids provisions

The project is in line with the national priorities in the field of radioactive waste management, as declared in the National Strategy of Safety of Spent Fuel and Radioactive Waste Management, and radioactive waste management requirements.

10. CONDITIONALITY AND SEQUENCING

The first conditionality is that the results of the PHARE project 632.01.01/2002 “Supply of equipment for characterisation of institutional radioactive waste and development of technical design for waste processing and storage facility” will be available on time i.e. by the end of 2005.

The second conditionality is that licence for construction is granted by the relevant Bulgarian regulatory authorities on time i.e. during the first quarter 2006.

ANNEXES TO PROJECT FICHE

1. Logical framework matrix in standard format
2. Project implementation plan
3. Contracting and disbursement schedule by quarter for full duration of programme (including disbursement period)
## LOGFRAME MATRIX for Project

### Civil construction works for establishment of waste processing plant and storage facility for Novi Han Repository

<table>
<thead>
<tr>
<th>Overall Objectives</th>
<th>Indicators of Achievement</th>
<th>Sources of Information</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  
- from 6-7.10³ long-lived sealed radiation sources to 15-20.10³ per year | Reports by International organisations such as IAEA  
Reports by NRA | |

### Project purpose

**Construction of buildings for waste processing and storage at Novi Nah Repository.**

Provision of the buildings with the related general electricity, water, sewage, HVAC installations

<table>
<thead>
<tr>
<th>Indicators of Achievement</th>
<th>Sources of Information</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
</table>
| Completion of the construction of the buildings | Reports by NRA  
Reports by independent consultants  
Reports by INRNE/State Enterprise “Radioactive waste” | Modification of regulations and requirements for radioactive waste management |

### Results of Projects

- Construction of two buildings for waste processing and storage of conditioned waste;

<table>
<thead>
<tr>
<th>Sources of Information</th>
<th>Assumptions and Risks</th>
</tr>
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<tbody>
<tr>
<td>Delay of construction permit</td>
<td></td>
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</tbody>
</table>
- Provision of the buildings with the related general electricity, water, sewage, HVAC installations;

<table>
<thead>
<tr>
<th>Activities</th>
<th>Delay in providing of input data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component I  Civil construction works for:</strong></td>
<td>Delay in supply</td>
</tr>
<tr>
<td>- Construction of building of 4000 m$^3$ for the radioactive waste processing plant.</td>
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<tr>
<td>- Installation of the related general electricity, water, sewage, HVAC installations,</td>
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<tr>
<td>- Commissioning</td>
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<td>- Testing</td>
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<tr>
<td>- Construction of building of 2000 m$^3$ for storage of radioactive waste</td>
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<tr>
<td>- Installation of the related general electricity, water, sewage, HVAC installations,</td>
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<td>- Commissioning</td>
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<td>- Testing</td>
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<td><strong>Component II  Supervision</strong></td>
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<tr>
<td>Programme Title</td>
<td>Component I</td>
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<tr>
<td>Implementation Schedule</td>
<td>PLANNED</td>
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<td>2005 TV</td>
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<td>2006 I</td>
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<td>2006 II</td>
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<tr>
<td>2006 III</td>
<td>I</td>
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<td>2006 IV</td>
<td>I</td>
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Legend:
- D = design of sub-projects (ToR evaluation).
- C = tendering and contracting.
- I = contract implementation and payment.
<table>
<thead>
<tr>
<th>Programme number</th>
<th>Document</th>
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<th>Section</th>
<th>D</th>
<th>Version</th>
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<td>DISBURSEMENT (PAYMENT) SCHEDULE</td>
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<th>Title</th>
<th>Projects</th>
<th>Sub-Projects</th>
<th>Budget Allocation</th>
<th>Cost Estimate</th>
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<tr>
<td></td>
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<td>Disbursement (Payment) Schedule</td>
<td>Budget Allocation</td>
<td>Cost Estimate</td>
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<th>Sub-Projects</th>
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<td>Projects</td>
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<td>Budget Allocation</td>
<td>Cost Estimate</td>
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<td>Component I</td>
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