SPECIAL NUCLEAR SAFETY PROJECT FICHE

1. Basic Information
   1.1 CRIS Number: 632.02.04
   1.2 Title: Realization of closure of a chamber in the Richard repository as input for establishing a safety case
   1.3 Sector: 23064
   1.4 Location: Czech Republic

2. Objectives
   2.1 Overall Objective(s):
      - Ability to take on the obligations of membership in EU
      - To follow the general recommendation Type II and requirements of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
      - to achieve during the accession period a compliance with practices in relevant EU waste management organizations
      - To assess the safety of the disposal system of institutional radioactive waste in the Richard repository
   
   2.2 Project purpose:
      - to eliminate burden from the past practice and ensure a full compliance of historical waste packages disposal with the present Czech regulatory requirements and international recommendations on safe disposal of radioactive waste
      - to improve overall long term safety of the Richard repository
      - to establish a program on evaluation of a long term behavior of the backfilled material and sealed waste packages for verification and validation of data necessary for the repository safety assessments.

   2.3 Accession Partnership and NPAA priority
   This project will create conditions for accomplishment of the medium-term priorities of the NPAA in sector policies and in the Accession Partnership. It is part of a comprehensive nuclear safety policy to be implemented at the national level. The Council Working Party on Nuclear Safety (WPNS) mandated by the Atomic Questions Group (AQG), issued recommendations concerning the safety of other types of nuclear installations than nuclear reactors. It is notably stated that "all candidate states should continue to develop and implement their national programs regarding the safe management of spent fuel and radioactive waste" (recommendations of type II). In this context the closure of the Richard repository chambers would constitute an important safety improvement. It is worth noting that this project complies with the new concept for radioactive waste management that was adopted by the Czech government in May 2002.

3. Description
   3.1 Background and justification:
   The repository Richard is underground, near surface type, in former limestone mine, and is licensed for disposal of short lived low and intermediate level radioactive waste arising from institutions.
The repository consists of the main access tunnel, excavated almost horizontally into a hillside for several hundred meters. A number of chambers leading off the main access tunnel are used for the disposal of radioactive waste, mostly conditioned in 200 liter drums. There are disposed of more than 20 thousands packages.

The "historical waste" from first phase of the repository operation is in majority not conditioned and is packed in various steel drums 50, 60, 100 or 200 liters. It is the intention of RAWRA (supported by Ministry of Industry and Trade and the State Office for Nuclear Safety) to backfill the void space between drums with a suitable grout prior to closure of the repository. RAWRA has developed a preliminary plan for Richard closure, based on existing data and general information on filling materials.

In the year 2001 EC approved the Phare project CZ 01.14.03 "Solution for closure of a chamber in the Richard repository", which purpose is to develop a plan for closure of one or more chambers filled with the waste, and that should be completed in 4 Q. 2003. The project results will be a realization plan of a chamber closure, safety report, specification of equipment required for the closure realization and other documents necessary for the closure realization.

The proposed project is a follow up phase - realization of the closure. The closure of the filled chambers and the proper filling of the voids within the chambers with an appropriate backfill material should ensure the following improvements, as compared to the present situation:

- protection of the waste packages against possible future ingress of water,
- reduction of the radiation level in working areas of the repository,
- reduction of the possible radionuclide releases in the environment,
- stabilization of the pilings of radioactive waste packages, and of the geotechnical stability of the disposal chambers,
- protection of the waste packages against corrosion and other degradations
- effective barrier against intrusion

3.2 Linked activities:
- Phare project, CZ 01.14.03 "Solution for closure of a chamber in the Richard repository", (in preparation of TOR)
- Feasibility Study of the Richard Repository Closure, (Energopruzkum, spol s r.o.; 1999)
- Program on Safety Assessment of the Repository Richard coordinated by RAWRA, (Aquatест, a.s., in co-operation with external suppliers; completion in IV.Q 2002)
- Program on Reconstruction and Maintenance of the Repository Richard Structures and Systems, coordinated by RAWRA, financed both from the Nuclear Account (created by waste generators fees) and the State Budget.
- Program on Monitoring of $^{222}$Rn Generation in the Richard Repository and proposal of Corrective Actions, realization RAWRA (in operation)
- Improvement of the Richard repository ventilation system, realization RAWRA (in operation)
- Project on Digitalization of Waste Packages Records from Repository Richard Archive and Detailed Analysis of Obtained Data, coordinator RAWRA, (AiPSafe s.r.o., Aquatest, Ipron; in progress)
- Assessment of Properties of Possible Backfilling Material from Desulphurization Process of Coal Fired Power Plants, (AGE, s.t.o., NRI Rez, CVUT Praha; in progress)
- Feasibility Study of the Bratrstvi Repository Closure, (Ipron, a.s.; 1999)
- Safety Assessment of the Bratrstvi Repository (Ipron, a.s.; in progress)

3.3 Results:
“Historical” waste packages sealed in disposal chambers
- Established program on long term monitoring of behavior of the backfilled material in contact with host rock and waste packages
- Validated radiological and technical data for safety assessments and for final closure plan development
- Enlarged disposal capacity
- Enhanced overall safety of the repository
- Improved operational and inspection conditions

3.4 Activities:
- Development of detailed working program, operational and safety instructions, their approval by the licensing authorities, staff training, etc.
- Detailed radiological monitoring and data validation
- Preparation of the chambers for closure
- Replacement and/or repackaging (if necessary) of waste packages
- Closure of defined chambers
- Launching the long term monitoring program
- Development of the Project final report

4. Institutional Framework

The project will support the operation of the state organization "Radioactive Waste Repository Authority (RAWRA)". The repositories of radioactive waste are according the Atomic Act a State property, which is managed by RAWRA.

5. Detailed Budget (in M €)

The budget is estimated on the basis of preliminary studies on the chamber closure completed by RAWRA in 1999 and 2001. Final costs of the project will be fixed in detail during the Phare project CZ 01.14.03 and should not exceed the figures given in the table below:

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Phare Support</th>
<th>National Co-financing*</th>
<th>IFI*</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment</td>
<td>Institution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support x)</td>
<td>Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Phare</td>
<td>(=I+IB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract 1</td>
<td>1,00</td>
<td>1,00</td>
<td>0,25</td>
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</tr>
<tr>
<td>Total</td>
<td>1,00</td>
<td>1,00</td>
<td>0,25</td>
<td>1,25</td>
</tr>
</tbody>
</table>

x) Investment will represent a greater part of the project, so the budget is given in this column

In the costs estimation there are not included RAWRA staff and operational costs, as well as the costs on preparatory actions provided in advance by RAWRA (see connected activities). The co-financing will be realized from the state budget, and RAWRA will include proposed resources in its annual budget for the year 2004. RAWRA will ensure financing of the long term monitoring program, which will follow after the project realization, separately from its own resources.

6. Implementation Arrangements

The decentralized implementation scheme (DIS) with ex-ante Commission control will be followed for the project. The CFCU will be the Implementing Agency responsible for tendering, contracting, and accounting:
6.1 Implementing Agency:
Mr. Jan Slavíček,
Letenská 15/ CZ - 118 10 PRAHA 1
Telephone: +420-2-57044551/Fax: +420-2-57044550 /E-mail: jan.slavicek@mfcr.cz

Final Beneficiary
RAWRA, Dlzadna 6, 110 00 Prague 1,
Director: Mr. Vitezslav Duda, MBA
Telephone: + 420-2-214 215 26

Technical co-ordination: Mr. Miroslav Kucerka
E-mail: kucerka@rawra.cz

6.2 Twinning: N/A
6.3 Non-standard aspects: N/A
6.4 Contracts:
(1) Supply contract – 1,25 M EUR

7. Implementation Schedule

7.1 Start of tendering/call for proposals 3Q/2003,
7.2 Start of project activity 1Q /2004
7.3 Project Completion 3.Q/ 2005

8. General criteria
8.1 Catalytic effect:

The Phare project will help RAWRA to speed up and enhance its effort to overcome the burden from the past activities at the Richard and Bratrstvi repositories, and reach the compliance with present regulatory requirements.

8.2 Additionality: N/A

8.3 Project readiness:

The preparatory activities, i.e. development of the technical documentation for the proposed project are subject of the Phare project CZ 01.14.03 “Solution for closure of a chamber in the Richard repository”. RAWRA will focus all its resources to support a successful start and completion of the project.

8.4 Sustainability:

Project is strictly oriented on long term (more than 300 years) sealing of the radioactive waste in the disposal chambers. At least at minimum for 30 years RAWRA expects to maintain a long term monitoring program on behavior of the sealing material in contact with the waste packages and the host rock. The monitoring program will serve for validation of reliability of the waste isolation barriers against radionuclides release into the environment.

9. Conditionality and sequencing

The entire Richard repository chamber closure can start only if the documentation for its realization is completed and approved by the Czech authorities (State Office for Nuclear Safety, Czech Mining Office, and Ministry of the Environment).

The co-funding of the project by the Czech authorities (RAWRA) will be ensured.
As far as applicable, measures taken should be in line with obligations under the Waste Framework Directorate (Directive 75/442/EEC as amended by Directive 91/156/EEC) as well as with the Directives on water quality, in particular, the Groundwater Directive 80/68/EEC, as well as the EIA Directive (Directive 85/337/EEC, 97/11/EC).

The project activities should comply with requirements of relevant Czech regulations, particularly of the Atomic Act and Mining Act.

The project will be sequenced as follows:

3Q/2003: start of project implementation procedures, contract procedure, completion of a detailed Technical Project Description Sheet, also the ToR.
1Q/2004: project procurement and detail specification of implementation plan. Start of work.
4Q/2004 completion of the preparatory activities, obtaining SONS and Czech Mining Office approval of implementation documentation and approval of the beginning of closure activities.
3Q/2005 End of chamber closure and set up of the long term monitoring program; completion and approval of the final report.

Annexes to project Fiche

1. Logical framework matrix
2. Detailed implementation chart
3. Contracting and disbursement schedule
4. Relevant Czech laws concerning nuclear energy utilization, environmental protection, etc.
5. State Office for Nuclear Safety specific regulations
# LOGFRAME PLANNING MATRIX FOR

## Project
Realization of closure of a chamber in the Richard repository as input for establishing a safety case

<table>
<thead>
<tr>
<th>Programme:</th>
<th>632.02.04</th>
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<tbody>
<tr>
<td>Contracting period expires:</td>
<td>30.11.2004</td>
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<tr>
<td>Disbursement period expires:</td>
<td>30.11.2005</td>
</tr>
<tr>
<td>Total Budget:</td>
<td>1.25 MEUR</td>
</tr>
<tr>
<td>Phare contribution:</td>
<td>1.0 MEUR</td>
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</table>

### Overall objective
- To ensure an Ability to take on the obligations of membership in EU, including adherence to the aims of political, economic and monetary union

<table>
<thead>
<tr>
<th>Objectively verifiable indicators</th>
<th>Sources of verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>acknowledge by the European Commission</td>
<td>European Commission Regular report</td>
</tr>
</tbody>
</table>

### Project purpose
- To follow the general recommendation Type II and requirements of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management,

<table>
<thead>
<tr>
<th>Objectively verifiable indicators</th>
<th>Sources of verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAWRA with enhanced capability to fulfil obligations defined in the Atomic Act (N° 18/1997)</td>
<td>Reports notably those published by the State Office for Nuclear Safety</td>
<td>Other recommendations within the Report on Nuclear Safety in the context of enlargement implemented as well.</td>
</tr>
</tbody>
</table>
### Results
- "Historical" waste packages sealed in disposal chambers
- Established program on long term monitoring of behavior of backfilled material in contact with host rock and waste packages
- Validated data for safety assessments and for final closure costs calculation
- Enlarged disposal capacity
- Enhanced overall safety of the repository
- Improved operational and inspection conditions
- RAWRA staff trained

### Objectively verifiable indicators
- Historical waste packages sealed in disposal chambers.
- Operational and inspection conditions fulfill SUJB requirements

### Sources of verification
- Internal RAWRA documents developed on the project recommendations
- Approved final report
- Safety report on technical solution
- SUJB’s approval of the final closure plan

### Assumptions
- It is assumed that due consideration is given to the Phare project "technical solution for the closure of Richard chambers" that was programmed in 2001 (CZ.0114.03)

### Activities
- Preparatory activities, contracting, licensing, delivery of equipment; preparing detailed operational and safety instructions, staff training, etc
- Detailed radiological monitoring and data validation
- Replacement (if necessary) of waste packages
- Closure of defined chambers
- Launching the long term monitoring program
- Preparation of the final report

### Means
- **Investment**
  - Equipment specified by the project (for radiological monitoring, for monitoring of behavior of sealed waste packages, for waste packages handling, etc)
- **Staff training**

### Assumptions
- National co-financing ensured

### Preconditions
- Completed and approved Phare project CZ.01.14.03
- Allocated financial resources for co–financing by RAWRA
- Selected contractor and signed contract on the project realization
- Approval of the project realization by the Czech authorities (State Office for Nuclear Safety, Czech Mining Office)
ANNEX 2

Detailed Implementation Chart for the Project

<table>
<thead>
<tr>
<th>Action</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
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<tbody>
<tr>
<td>Start of project activity</td>
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<tr>
<td>Project completion</td>
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</table>
### Contracting and Disbursement Schedule by Quarter for full Duration of the Project

#### Cumulative Quarterly Contracting Schedule (M€)

<table>
<thead>
<tr>
<th>Quarter / Year</th>
<th>4Q/02</th>
<th>1Q/03</th>
<th>2Q/03</th>
<th>3Q/03</th>
<th>4Q/03</th>
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<tbody>
<tr>
<td>Realization of closure of a chamber in the Richard repository</td>
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#### Cumulative Quarterly Disbursement Schedule (M€)

<table>
<thead>
<tr>
<th>Quarter / Year</th>
<th>4Q/02</th>
<th>1Q/03</th>
<th>2Q/03</th>
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</tr>
</tbody>
</table>
Relevant Czech laws concerning nuclear energy utilization, environmental protection, etc.

i. Act No. 18/1997 Coll., on the peaceful utilization of nuclear energy and ionizing radiation (Atomic Act) and on alterations and amendments of some acts, as amended by the Act 13/2002 Coll.: 
Basic law regulating the utilization of nuclear energy and ionizing radiation together with conditions for performance of activities related to nuclear energy utilization and practices resulting in radiation exposure, including special requirements ensuring civil liability in case of a nuclear damage, conditions for safe disposal of radioactive wastes and performance of the state administration and supervision within the process of nuclear energy utilization, during practices resulting in radiation exposure and over nuclear items.

ii. Act No. 50/1976 Coll. on land planning and construction regulations (Building Act) as amended by Act No. 83/1998 Coll.: 
Regulates protection of the environment and other special interests in connection with the siting and construction of nuclear installations and workplaces with significant or very significant sources of ionizing radiation.

iii. Act No. 17/1992 Coll., on the environment: 
Liability in the protection of the environment, Environmental impact assessment of human activities, EIA of activities overlapping country borders.

iv. Act No. 244/1992 Coll., on the environmental impact assessment: 
Regulation of the assessment of the impacts of constructions, their changes and changes in their use (buildings, activities, technologies, concepts of developments and programs and products) on the environment.

v. Act No. 44/1988 Coll., on the protection and utilization of mineral resources (Mining Act)

vi. Act No. 61/1998 Coll., on mining activities, explosives and the State Mining Administration as amended.

vii. Act No. 111/1994 Coll., on the road transportation

Other laws:


ix. Act No. 505/1990 Coll. on Metrology

x. Act No. 123/1998 Coll., on the right on information on the environment:

State Office for Nuclear Safety specific regulations

Majority of these regulations will be amended or replaced according new wording of the Atomic Act adopted in January 2002


b. Decree No. 142/1997 Coll., on type-approval of packaging assemblies for transportation, storage and disposal of radioactive sources and nuclear materials.

c. Decree No. 143/1997 Coll., on transportation and shipment of special nuclear materials and special radioactive sources.

d. Decree No. 146/1997 Coll., regulating activities directly affecting nuclear safety and activities particularly important from the radiation protection viewpoint, requirements on professional training, validation of professional qualification and grant authorization to selected personnel, and documentation to be approved to permit training of selected personnel.

e. Decree No. 214/1997 Coll., on quality assurance during activities related to the utilization of nuclear energy and activities resulting in radiation exposure.

f. Decree No. 215/1997 Coll., on the criteria for siting nuclear facilities and workplaces with very significant sources of ionizing radiation.

g. Decree No. 219/1997 Coll., on details of emergency preparedness of nuclear facilities and workplaces with sources of ionizing radiation.

h. Decree No. 195/1999 Coll., on basic design criteria for nuclear installations with respect to nuclear safety, radiation protection and emergency preparedness.

i. Decree No. 196/1999 Coll., on decommissioning of nuclear installations and workplaces with significant or very significant sources of ionizing radiation.