SPECIAL NUCLEAR PROJECT FICHE

1. Basic information
1.1. CRIS Number: 2004/016-815.01.01
1.2. Title: Severe Accident Management Guidelines (SAMGs) review and assessment in compliance with international requirements
1.3. Sector: IN&EN (Nuclear safety and radiation protection)
1.4. Location: Bulgaria

2. Objectives
2.1. Overall Objective(s):
The project objective is to assist the Bulgarian Nuclear Regulatory Agency in the process of review of the Severe Accident Management Guidelines of Kozloduy NPP units 3&4 and 5&6.

2.2. Project purpose:
The project aims at providing EU expertise to support Bulgarian Nuclear Regulatory Agency and its TSOs in the review of the SAMGs for Kozloduy NPP unit 3&4 and 5&6;
Improvement of BNRA capacity through training of NRA staff and transfer of knowledge and capabilities in the area of review of SAMGs from member states regulatory authorities, including development of a Procedure for review and assessment of SAMG by the regulatory authority.

2.3. Accession Partnership and NPAA priority
This project will create conditions for further improvement in areas defined in the Council Report on Nuclear Safety in the Context of Enlargement (doc. 9181/01 ATO 36 ELARG 118) of June 2001, as well as the Regular Report on Bulgarian Progress Towards Accession.

2.4. Contribution to National Development Plan
N/A

2.5. Cross Border Impact
N/A

3. Description
3.1. Background and justification:
While the DBA challenge the adequate safety in any operational state and the appropriate application of “defense in depth” concept, the severe accidents treat the phenomena of core degradation progression and their consequences under beyond design basis conditions.
Severe accident management approaches for the WWER reactors have been changing significantly lately. So far they are based on a deterministic choice of the most important initiating events. All the Severe Accident measures, based on such a limited approach, were event oriented and all the efforts were concentrated on avoiding severe core damage, while the management of accidents, already in the severe phase, remained uncovered. The necessity to develop a new SAMG (Severe Accident Management Guideline) determined both by the experience, gained internationally and inside Bulgaria, and by the increased requirements of the up to date standards is covered by the PHARE project BG 01.10.01 “Phenomena investigation and development of Severe Accident Management Guideline”.
This project, in progress, will take into account all specifics of Kozloduy WWER-440 and WWER-1000 reactors and provide the NPP operators and experts, involved in emergency management, with a systematic approach for a response to accidents leading to partial or complete melting of the reactor core. It can also propose some changes, normally in the use of procedures, for improvement of Kozloduy units 3 & 4 and 5 & 6 response to severe accidents. The development of detailed Severe Accident Management Guidelines will be in accordance with the Western Standards and ready for use by KNPP and for endorsement by the BNRA.

3.2. Linked activities:
The proposed project will review the results of the ongoing PHARE project BG 01.10.01 “Phenomena investigation and development of Severe Accident Management Guideline”;

3.3. Results:
The main results are:
- Increased NRA competence and technical expertise in the area of severe accidents;
- Familiarization with the relevant EU member states requirements concerning the format and content of the SAMG.
- Definition of regulatory criteria for acceptance of the results achieved in the SAMG development process;
- Development of a methodology for assessment of SAMGs to be used by the Regulator – assessment procedure;
- Review and assessment in support of regulatory approval of SAMG produced for Kozloduy NPP units 3-4 and 5-6, within project BG-01.10.01.

3.4. Activities:
The work programme of this project should implement the following tasks:
Task 1: Severe Accident Management Guidelines (SAMGs) review and assessment in compliance with international requirements
- Task 1.1: Development of a modern methodology for review and assessment of SAMGs;
- Task 1.2: To perform the review of Kozloduy NPP SAMGs, based on internationally recognized safety principles, internationally formulated safety guidelines and established practices;
- Task 1.3: To review and assess the methodology applied to the analyses of severe accidents: applicability of the computer codes used, adequacy of modeling assumptions, and uncertainty analyses applied to KznPP SAMGs.

Task 2: Transfer of knowledge and capabilities in the area of review of SAMGs to BNRA

- Task 2.1: On-the-job training of NRA and TSOs staff in review of SAMGs
- Task 2.2: Analyses of the review process, including effectiveness of the used review methodology and validation and approval of a regulatory procedure (methodology) for review and assessment of SAMGs (in general), based on results of task 1;

4. Institutional Framework

The Nuclear Regulatory Agency is the Bulgarian regulatory authority in the field of nuclear safety, radiation protection, management of radioactive waste and management spent fuel.

The BNRA will benefit from the project.

5. Detailed Budget

<table>
<thead>
<tr>
<th>PHARE Support</th>
<th>Institution Building</th>
<th>Total Phare (= I+IB)</th>
<th>National Co-financing*</th>
<th>IFI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Support</td>
<td>€ 0.80 Million</td>
<td>€ 0.80 Million</td>
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<td>€ 0.8 Million</td>
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<td>Contract 1</td>
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<td>Total</td>
<td>-</td>
<td>€ 0.80 Million</td>
<td>€ 0.80 Million</td>
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</table>

6. Implementation Arrangements

6.1. Implementing Agency

The Central Financing and Contracting Unit (CFCU) of the Ministry of Finance will be responsible for tendering, contracting, payments and financial reporting.

Contact Person:
Mr. Tencho Popov
Secretary General - PAO
Ministry of Finance
102, Rakovski Str., 1000 Sofia, Bulgaria,
Tel: (+359 2) 9859 2772
Fax: (+359 2) 9859 2773
E-mail: cfcu@minfin.bg
6.2. **Beneficiary**
Nuclear Regulatory Agency,
Prof. Dr. Emil Ivanov Vapirev, Chairman
69, Shipchenski prokhod Blvd,
1574 Sofia, Bulgaria
Tel.: +359 2 9406 800, Fax: +359 2 9406 919
Contact Person:
Mr. Krassimir Avdjiev M.Sc.
Head of Division
69, Shipchenski prokhod Blvd.,
1574 Sofia, Bulgaria
Tel.: (+359 2) 94 06 805
Fax: (+359 2) 94 06 919
e-mail: K.Avdjiiev@bnsa.bas.bg

6.3. **Twinning:**
N/A

6.4. **Non-standard aspects**
N/A

6.5. **Contract**
One PHARE Service contract should be placed.

**7. Implementation Schedule**

7.1. **Start of tendering/call for proposals:** June 2005

7.2. **Start of project activity:** September 2005

7.3. **Project Completion:** July 2006 (It is very important to respect this deadline).

7.4. **Implementation timetable of the project:** 13 months duration.

**8. General criteria**

8.1 **Catalytic effect**
The Phare contribution will act as catalyst for priority Accession-driven actions in the field of nuclear safety and radiation protection.

8.2 **Additionality**

8.3 **Project readiness**
Full readiness exists within the BNRA to start implementing the project, as the necessary resources and manpower are readily available.
8.4  Sustainability
Sustainability of the project will be in the areas of developed guides, safety assessment and trained BNRA staff.

8.5  Compliance with State aids provisions

8.6  Equal Opportunity
Equal participation of women and men will be ensured in all phases of the project. Recently, BNRA employs about 60% of female experts.

9.  Conditionality and sequencing
Support for implementing the project will be provided taking into consideration the support provided to Kozloduy NPP under project BG 01.10.01, avoiding any possible conflict of interest.

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

<table>
<thead>
<tr>
<th>Project</th>
<th>Programme name and number</th>
<th>Contracting period expires</th>
<th>Execution of contract period expires</th>
<th>Total budget: €0.8 million</th>
<th>Phare budget: €0.8 million</th>
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<tbody>
<tr>
<td>Severe Accident Management Guidelines (SAMGs) review and assessment in compliance with international requirements</td>
<td>2004/016-815.01.01</td>
<td>30 November 2006</td>
<td>30 November 2007</td>
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### Overall objective
Review by BNRA of the Severe Accident Management Guidelines of Kozloduy NPP units 3&4 and 5&6

### Objectively Verifiable Indicators
- Kz NPP SAMGs approval by the NRA
- Regular Accession Reports
- AQG reports
- Monitoring by Delegation

### Sources of Verification

### Assumptions

### Project purpose
- Providing EU expertise to support Bulgarian Nuclear Regulatory Agency and its TSOs in the review of the SAMGs for Kozloduy NPP unit 3&4 and 5&6;
- Improvement of BNRA capacity through training of NRA staff and transfer of knowledge and capabilities in the area of review of SAMGs, including development of a Procedure for review and assessment of SAMGs by the regulatory authority.

### Objectively Verifiable Indicators
Familiarization with the relevant member states requirements about the format and content of the Severe Accident Management Guidelines. Established regulatory approach and acceptance criteria for SAMGs. Trained NRA staff. Procedure for review and assessment of SAMGs.

### Sources of Verification
- Monitoring Reports
- Project Reports
- Licensees

### Assumptions
- Successful completion of linked Phare projects

### Results
- Regulatory requirements on the format and content of SAMGs.
- Regulatory criteria for acceptance of the results achieved in the SAMG development process;
- Development of a methodology for assessment of SAMGs to be used by the Regulator - assessment procedure;
- Review and assessment in support of regulatory approval of SAMG produced for Kozloduy NPP units 3-4 and 5-6, within project BG-01.10.01;

### Objectively Verifiable Indicators
- Structure, format and contents of SAMGs
- Approved regulatory acceptance criteria
- Approved procedure for review and assessment of SAMGs

### Sources of Verification
- Reports during the implementation of the project
- Final report
- Monitoring by Delegation
- Final meeting of the Steering Committee

### Assumptions
- Successful implementation of linked Phare project

### Activities
- Kz NPP Severe Accident Management Guidelines (SAMGs) review and assessment in compliance with international requirements
- Transfer of knowledge and capabilities in the area of review of SAMGs to BNRA.

### Means
- Service contract
- Training seminars
- Study visits

### Assumptions
- Preconditions
ANNEX II

DETAILED PROJECT IMPLEMENTATION CHART

Severe Accident Management Guidelines (SAMGs) review and assessment in compliance with international requirements

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
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<td>Month</td>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
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<tr>
<td>Service</td>
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Design (ToR) Jan-May 2005
Tendering June-August 2005
Implementation September 2005 - July 2006
# ANNEX III

## CUMULATIVE CONTRACTING SCHEDULE IN MEURO/€

<table>
<thead>
<tr>
<th>Project name</th>
<th>Expected Contractual Commitments (Quarters)</th>
<th>Budget allocation (Phare funds)</th>
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<td>0.8</td>
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<tr>
<td>Service Contract</td>
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<tr>
<td>Total funds</td>
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## CUMULATIVE WORK AND DISBURSEMENT SCHEDULE IN MEURO/€

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<th>Cumulative Work and Disbursement Schedule (Quarters)</th>
<th>Budget allocation (Phare funds)</th>
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