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COMMISSION OF THE EUROPEAN COMMUNITIES

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**REPORT FROM THE COMMISSION**

**Fourth Progress Report  
on the implementation of the Chernobyl Shelter Fund  
September 2007**

**{SEC(2007) 1701}**

## 1. INTRODUCTION

The Chernobyl Nuclear Power Plant (ChNPP) is situated 110 Km north of Kiev, its construction began in the 1970s. By 1983 four units were in operation producing about 10 percent of Ukraine's electricity. At the time of the accident two additional units were under construction. The nearby city of Chernobyl had a population of 12,500.

Following the accident of 26 April 1986 some 200,000 people were evacuated from the vicinity of Chernobyl and a Shelter (sometimes referred to as 'sarcophagus') enclosing the remains of ChNPP Unit 4 was constructed under exceedingly hazardous conditions. Units 1, 2 and 3 (adjacent to Unit 4) were put back into operation, raising the fear of another accident.

The G7 countries and the European Commission (EC) took the lead in providing assistance to mitigate the consequences of the accident. The Memorandum of Understanding between the G7 the EC and Ukraine on the closure of Chernobyl<sup>1</sup> by the year 2000 reflects the commitment, the Commission has played a major role in its implementation through the Tacis programme. The G7 (now G8) and the Commission have reaffirmed the intention to continue their support at several summits.

The Shelter was not intended to be a permanent solution and, in fact, it became increasingly unstable, it deteriorated allowing the ingress of rainwater. There was a risk of collapse due to seismic disturbance, extreme weather or further deterioration of the structure. The possibility of contamination of the surrounding zone will persist until the highly radioactive material contained under the Shelter is adequately isolated from the environment.

In May 1997 a group of international experts from the EU, USA, Japan and Ukraine finalized a multidisciplinary construction management programme designated as the Shelter Implementation Plan (SIP). The SIP foresaw remedial work on the Shelter directed towards making it physically stable and environmentally safe. In the same year, the G7 and the Commission and other donors requested the European Bank for Reconstruction and Development (EBRD) to set up the Chernobyl Shelter Fund (CSF) to finance the SIP.

In 2007, ten years after the agreement on the SIP between the G7 and the EC and Ukraine and its inception, most of its tasks have been completed. The required site infrastructure and facilities have been built and the stabilization of the shelter has been finished. This makes possible the start of the construction of the New Safe Confinement (NSC) which represents the last major construction project at the site.

The initial indicative cost of the SIP (calculated in 1997) amounted to approximately USD 758 million (USD 768 million including the licensing support) and a

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<sup>1</sup> Memorandum of Understanding Between the Governments of the G7 Countries and the Commission of the European Communities and the Government of Ukraine on the Closure of the Chernobyl Nuclear Power Plant, done in Ottawa on 20 December 1995.

construction time of seven years (1998-2005). A first pledging conference was held in New York in November 1997 to raise the required funds. Twenty five countries pledged some USD 400 million including Ukraine's USD 50 million in-kind contribution. This sum was sufficient to undertake work on the first tasks of the SIP. The project started effectively in April 1998 with the setting up of the Project Management Unit (PMU).

Council Decision 98/381/EC of 5 June 1998 concerning the Community contribution to the European Bank for Reconstruction and Development for the Chernobyl Shelter Fund<sup>2</sup> provided the legal basis for a Community contribution to the CSF of a USD 100 million pledge made at the 1997 G7 summit in Denver. This was paid over the years 1999/2000 from the TACIS financial envelope.

A second pledging conference was held in July 2000 in Berlin. Some USD 320 million were pledged by 22 countries bringing the total amount pledged in the two conferences close to the estimated cost of USD 768 million. The Community pledged a second contribution of €100 million which was approved by Council decision 2001/824/EC<sup>3</sup>.

In 2003 the PMU presented a revised schedule and a first cost estimate, based on the actual cost of completed projects and contract values for ongoing projects, amounting to some USD 1,091 million. The EBRD, as manager of the Fund, warned that a replenishment was needed if the new schedule was to be maintained. The latest estimate served as a basis for additional pledges by the donors in London in May 2005. Taking into account the historical burden sharing, the Commission pledged an additional €49.1 million, bringing the Commission's total contribution so far to the Fund to some €240 million. However, due to delays, escalation and increases in the prices of labour and materials, a further significant increase relative to the first cost estimate was subsequently announced to the Assembly of Contributors (see below).

According to Art. 3 of Council Decision 98/381/EC and Art 4 of Council Decision 2006/908/EC concerning the Community's contributions to the EBRD for the Chernobyl Shelter Fund, the Commission must submit progress reports on its implementation to the European Parliament and the Council. Such reports were submitted in October 1999<sup>4</sup>, September 2001<sup>5</sup> and December 2003<sup>6</sup>. The present report updates the previous ones, based mainly on the progress communicated to the Assembly of Contributors and other information provided by the EBRD<sup>7</sup>.

## 2. POLITICAL AND INSTITUTIONAL ISSUES

It has often been mentioned that a stable institutional environment and competent management are essential for the orderly and timely implementation of the SIP. However, given the political visibility of the projects, the sums involved and

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<sup>2</sup> OJ L 171, 17.6.1998, p. 31

<sup>3</sup> OJ L 308, 27.11.2001, p. 25

<sup>4</sup> COM(1999)470 of 12.10.1999

<sup>5</sup> COM(2001)251 of 29.05.2001

<sup>6</sup> COM(2004)481 of 14.05.2004

<sup>7</sup> An expanded version of this report together with annexes is annexed to the present document.

differing agendas, difficulties were inevitable. Furthermore, the unique aspects of the SIP required a special licensing process and legislation to be put in place.

The need for ownership at the senior level of the Ukrainian administration was recognized at a very early stage. Practical measures were taken in this respect, Ukraine took full membership of the Assembly and the Joint Ukraine-EBRD Committee was included in the Rules of the CSF. The Framework Agreement between the EBRD and Ukraine concluded in 1997 and ratified by the Ukrainian Parliament in 1998, created the legal basis for the operation of the CSF in Ukraine. These arrangements established a solid basis, but frequent changes of government and senior administration levels made it impossible to maintain the continuity of leadership, the institutional memory and the required stability.

One particular factor which caused serious concern was the transfer of the administrative responsibility for the ChNPP from the Ministry of Fuel and Energy to the Ministry of Emergencies in 2005. Although this was an internal Ukrainian matter, it resulted in experience and institutional memory being lost in the process, which inevitably caused disruption.

In 2006 the tendering process for the NSC created controversy. The review of complaints and extensive discussions prior to awarding the contract, particularly with the Ukrainian side, caused over one year's delay, which led to a considerable cost increase due to escalation and management costs. The donors took a firm stance in that the CSF Rules should be strictly adhered to and that there could be no deviation from the conclusions of the tendering process once it was established that there were no irregularities.

The licensing approach for the SIP is also recognized as essential for the orderly implementation of the projects. In 2003 the Cabinet of Ministers approved a decree on the SIP regulatory reviews and approvals: the "SIP Implementation Order". This was followed in mid 2004 by a further decree simplifying the certification procedure for equipment procured under the CSF.

The institutional environment has been one of the main causes of the delays in the Chernobyl projects. It is expected that with the experience gained over the years and most of the important decisions concerning the SIP having now been taken, the running of the projects will be smoother in future. However the NSC project, representing about half of the cost of the SIP, is yet to start. Any delays, particularly during the construction phase, would be highly costly, therefore all parties need to remain attentive so that the impact of any problems that may arise be immediately dealt with and minimized.

### **3. STATUS OF IMPLEMENTATION OF THE SIP**

#### **3.1. Grant agreements**

The financial commitments of the CSF are determined by grant agreements concluded between the Bank and the Ukrainian recipients. The recipient can place contracts according to agreed allocation schemes in accordance with EBRD's Procurement Policies and Rules. The Bank monitors compliance and disburses funds

directly to contractors; the Bank's Nuclear Safety Department and the Recipient's PMU provide an additional layer of control. So far, the EBRD has concluded 8 grant agreements.

As of 30 June 2007 €457 million had been allocated to Grant Agreements. The Assembly of 17 July 2007 approved the allocation of €330 million to Grant Agreement No. 8 and authorized the Bank to allocate new contributions to this Grant Agreement until an amount of €490 million is reached.

As of July 2007 138 contracts, amounting to €356 million, had been concluded within the seven initial grant agreements, 86 of these had been completed.

### **3.2. Stabilization and other projects**

The Shelter, which isolated the high level radiation sources and buried the remnants of the destroyed reactor of Unit 4, was completed by the end of November 1986. Some of its structural elements were distorted and presented cracks indicating a potential risk of collapse. In order to reduce this risk, a contract was concluded in July 2004 with a Ukrainian-Russian consortium (led by Atomstroyexport of Russia) to implement stabilization measures. These will reduce the risk of collapse over the next 10 to 15 years by which time the Shelter will be enclosed in the NSC and the deconstruction of the most unstable parts will take place.

The work on stabilization started in November 2004 and was completed on schedule and within the budget by the beginning of 2007. This was a significant success given the difficult conditions inside the Shelter (accessibility, debris, high levels of radiation and unpredictability of further developments). Minimizing the radiation exposure of personnel was paramount; this was achieved by careful planning, training, shielding and assembly of structural components in a clean area of the construction site.

The EBRD reported also that significant progress been achieved on the infrastructure projects.

### **3.3. The New Safe Confinement (NSC)**

The New Safe Confinement (NSC) is the designation of the arch-shaped structure which will be assembled in a safe area near Unit 4 and then slid across the old shelter. It is intended to isolate radioactive material from the environment for up to 100 years. It will also contain equipment and facilities to, when appropriate, dismantle the existing shelter and remove Fuel Containing Material (FCM).

The tendering for the NSC took much longer than anticipated. The design team completed the tender package for detailed design and construction by June 2003, however agreement on the final tender took until March 2004, when the invitations for technical proposals were launched. Three proposals were received in November 2004. Following an exceptionally thorough clarification of the technical and regulatory requirements, due to the impact on schedule and price, two consortia (Novarka and CH2M Hill) were invited to submit commercial proposals. The review and evaluation were completed by February 2006.

The subsequent evaluation process for the NSC proved to be rather lengthy, due to a procurement complaint and the questioning of the results by some Ukrainian officials, which required a further review in accordance with the Rules of the Chernobyl Shelter Fund and the EBRD Procurement Policies and Rules.

All outstanding issues were resolved to the satisfaction of the parties concerned and the independent observers confirmed that the pre-award contract negotiations had been duly carried out. At the Assembly of 17 July 2007 the donors authorized the Bank to give its non-objection to Grant Agreement No. 8 for the NSC and approved an initial allocation of funds. The Bank and the Ukrainian authorities signed the Grant Agreement at the beginning of August. The letter of award to Novarka was transmitted by the ChNPP on August 9 and the actual contract was signed on 24 August 2007. The current schedule foresees the completion of the NSC by December 2011.

### **3.4. Health, safety and environment**

An Environmental Action Plan, established in 1998 according to EBRD standard policy, is regularly updated and periodically audited by the Bank's Environmental Department and its independent consultants.

It is important to note that biomedical and screening programmes were put in place in 2004 and that more than three thousand people were checked. With some 86 contracts completed there have been no radiological or industrial accidents with major consequences.

### **3.5. Radioactive waste management**

Continued attention is required by Ukrainian authorities to the waste management problems and to the co-ordination of the international projects dealing with radioactive waste so that the SIP will not be unduly delayed. Buffer facilities have been identified to solve the most urgent problems (including additional space for high level waste storage made available by the Tacis funded Industrial Complex for Solid Radioactive waste Management) so that, in the short term, waste storage will not impact the critical path for completion of the SIP.

## **4. REVISED SCHEDULE AND COST ESTIMATE**

### **4.1. Schedule**

The implementation of the SIP started by the end of 1998 with the mobilization of the PMU as well as the contract awards for Licensing Consultant to the Ukrainian nuclear regulator and the Early Biddable Projects. Despite delays, neither the stabilization of the shelter nor the implementation of the SIP tasks affected the critical path of the SIP, this has always been dictated by the activities associated with the NSC.

By mid 2003 the PMU expected that the commissioning of the NSC could take place by the end of 2008, based on approval of both the concept design and detail design and construction of the NSC taking 5 years, but delays in the tendering process obliged the PMU to make successive revisions.

## **The key milestones of the NSC**

### **Completed:**

- April 2001 Safe Confinement Strategy (P10 Programmatic Decision)
- July 2001 Work on the terms of reference of the concept design begins
- May-Oct 2002 Notice to Proceed/Contract award for concept design
- June 2003 Concept design completed
- December 2003 Concept design submitted for regulatory review
- March 2004 Invitations for detailed design and construction proposal
- July 2004 Approval of the concept design by the Cabinet of Ministers
- November 2004 Stage 1 (technical) proposals received
- September 2005 Commercial proposal from two bidding consortia
- November 2005 Revised commercial proposals
- February 2006 Evaluation completed
- September 2006 EBRD's Procurement and Contracting Committee (PCC) review confirms evaluation
- December 2006 to June 2007 NSC pre-contract discussions
- June 2007
- August 2007 NSC contract award

### **Planned:**

- December 2008 Completion of detailed design for NSC (16 months)
- December 2011 Completion of NSC (construction 3 years)

## **4.2. Cost estimate**

The initial indicative cost of the SIP was put at USD 758 million in 1997 to which a lump sum of USD 10 million was added for support to the regulatory authorities, bringing the total to USD 768 million. This figure was presented as a preliminary cost estimate suitable to support international pledging of funds.

The EBRD and the PMU pointed out to the Assembly that the SIP was a concept paper providing only for the main elements of the projects. During implementation of the SIP the scope changed to take into account new needs or eliminate tasks which were not necessary. The SIP had assumed that most of the preparatory and infrastructure works would be available but, in fact, a number of these projects had to



be added to the scope. The SIP did not allow time for the regulatory process which added also to the costs, neither did it include any costs associated with management of the fund. However, the largest sums which were added to the cost were the contingencies and escalation for the NSC which were not included in the 1997 indicative cost. Some of the main cost elements, notably steel, energy, concrete and Ukrainian labour have increased sharply since 1997 (far beyond the average rate of inflation).

In 2003 the PMU presented the first cost estimate based on actual cost of completed projects, contract values for ongoing projects and estimates for the projects not yet started, amounting to USD 1,091,062,000. A revision was presented to the donor's assembly in February 2006. It made adjustments to the previous estimate based on the progress and completion of subprojects and took into account the prices quoted by the two bidders for the NSC. This proved to be significantly higher than anticipated and the cost estimate for the SIP was raised to USD 1,204,103,000.

As the delays in the tendering process impacted the conclusion of the contract for the NSC, the cost will increase in line with the provisions of the tender. At the donor's assembly of 17 July 2007 the PMU presented its latest 'SIP cost Forecast' amounting to USD 1,390 million, an increase of USD 186 million relative to its previous estimate. The most significant changes which caused this increase were: escalation due to delayed NSC award (USD 87.5 million), USD increase due to Euro-USD exchange rate (USD 51.3 million) and increase for NSC escalation during performance (USD 47.3 million).

The next important step in the assessment of the cost will be the completion of the detailed design of the NSC, which will provide precision on the quantities and cost of materials actually needed. This is expected to be available by the end of 2008 (some 16 months after contract award).

## **5. FINANCIAL OVERVIEW**

### **5.1. Income and expenditure**

At the end of June 2007 the Bank recorded total contributions of €739 million to the CSF, corresponding to the commitments made through Contribution Agreements, donations and in kind contributions. The Fund has accrued interest of €71 million, which brings the total to €810 million. In addition there are a number of pledges (mostly made at the May 2005 London fund-raising event) amounting to some €100 million, which are yet to be committed as Contribution Agreements and actual payments

Until 30 June 2007 €457 million had been allocated under the 7 grant agreements concluded until then. The total value of the contracts concluded under these grant agreements amount to €556 million, of which €308 million have been disbursed.

The amount of unallocated funds as of 30 June 2007 was some €300 million. This amount will rise to some €400 million provided that the outstanding pledges, yet to be formalized, will materialize.

## 5.2. New pledges

The SIP cost estimate which led to the USD 1,091 million figure was analysed in detail at the donors assembly in April 2004. It was made clear at the time that the uncommitted funds available under the CSF were not sufficient for the effectiveness of the future grant agreement for the New Safe Confinement.

Following agreement amongst the donors on the respective contributions, a pledging event took place at the EBRD in London on 12 May 2005. The donors pledged the equivalent of €181.496 million, including €49.1 million from the Commission, €2 million from Ukraine and, for the first time, €10 million from Russia. The first instalment of the Commission's pledge (€14.4 million) has been paid into the CSF in accordance with a Council Decision of 4 December 2006<sup>8</sup>, a second instalment (€10 million) will be financed by the Instrument for Nuclear Safety Cooperation and paid in 2007. The remainder of the Commission's pledge will be paid over the period 2008-2011.

There are presently enough funds available within the CSF to permit the conclusion of the first phase of the contract for the NSC, but the existing funds, plus the outstanding pledges still to be converted into Contribution Agreements, will not be sufficient to cover the full cost of the contract.

The members of the G8 plus the Commission, which represent the main contributors to the CSF, have reiterated their commitment to the completion of the SIP. This is clearly stated in the report of the G8 Nuclear Safety and Security Group (NSSG) to the leaders for the July 2007 G8 Summit Meetings in St. Petersburg. More recently, in the declaration of the G8 Heiligendamm Summit in June 2007, it is stated that:

*"...In recognition of the Chernobyl accident in 1986 we reaffirm our commitments – under former G7/G8 Summit declarations and memoranda of understanding and through Chernobyl Shelter Fund (CSF) and Nuclear Safety Account (NSA) programmes – to undertake joint efforts with Ukraine to convert the damaged reactor unit site into safe conditions."*

## 6. FOLLOW UP AND SUPPORT BY THE EUROPEAN COMMISSION

As the main contributor to the CSF, the Commission follows very closely the development of the issues affecting the Fund, specially those having schedule and financial implications. The Commission services are in regular contact with other main donors, in particular those in the EU, and the EBRD. The Commission has provided its political support whenever needed, for example in upholding the Rules of the Fund (which invoke the Bank's Procurement Rules) in the tendering for the NSC.

The Commission's support to the Chernobyl projects is not limited to the CSF. Tacis has played a major role in the implementation of the 1995 Memorandum of Understanding between the G7 and the EC and Ukraine on the closure of Chernobyl. The EC has so far committed some €470 million for Chernobyl and related projects,

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<sup>8</sup> OJ L 346, 9.12.2006, p. 28

the majority of which from the Tacis budget. These projects studied, assessed and mitigated the consequences of the Chernobyl accident and provided assistance for the decommissioning of the plant's units 1, 2 and 3. A contribution was also made by the EC to the additional costs of replacement energy following the shut down of the last operating unit in 2000. Other projects addressed the social and regional consequences of the closure of Chernobyl and provided support for power sector reform in Ukraine.

The Commission supported the construction of the Industrial Complex for Solid Radwaste Management (ICSRM), which is nearing completion, and the projects under the EBRD's Nuclear Safety Account. It provided also support to Ukraine for the organization of the conference marking the 20<sup>th</sup> anniversary of the accident in 2006. On the social and health side it is currently supporting the CORE programme. It is also envisaged to support a project to improve the living conditions of the children in the area affected by the accident.

The latest cost increases, inevitable as they may be, give cause for concern. The Commission will remain committed to the Chernobyl cause and plans to make an additional effort, in accordance with the historical burden sharing, but it cannot be expected to continue contributing to cover all cost increases solely from the limited budget of the Instrument for Nuclear Safety; this would be to the detriment of other nuclear safety projects. The contribution of the Russian Federation, which recently became a donor to the Fund, and the additional contribution of Ukraine helped to reduce the deficit, however it is expected that Ukraine will take increasing ownership of the projects and contribute a larger share of the financial burden.

## **7. CONCLUSIONS**

Significant progress has been achieved on the projects under the Shelter Implementation Plan (SIP), notably on the infrastructure and stabilization of the existing shelter, which was completed on schedule and within budget.

The SIP management and environmental audits carried out in 2007 confirmed the adequacy of existing management, as well as industrial and health and safety arrangements. However the management audit pointed again to the need to increase the number of qualified Ukrainian staff in the Project Management Unit (PMU), to replace dependency on Western PMU staff and ensure long term stability of management after commissioning of the NSC.

The schedule for completion of the SIP is currently end 2011. The critical path is determined by the New Safe Confinement (NSC) contract milestones. It is expected that the thorough analysis and preparation work will reduce the risk of costly delays during the construction phase. Good management and cooperation of all parties, in particular of the Ukrainian government and the regulators, will be essential for the successful completion of the project.

The total cost of the SIP, taking into account the cost of projects already completed or ongoing and the current cost of NSC plus escalation, has been put at USD 1,390 million.

Taking into account the pledges made in 2005 in London, there are currently enough funds available in the CSF to conclude the contract for the NSC and start the work. However, according to the latest estimates, the existing funds are not sufficient to complete the project. Additional funds will be required to complete the Chernobyl projects financed by the CFS as well as the Nuclear Safety Account.

The SIP has been under-funded from the start and will have to continue relying on the solidarity of the international community, this is becoming increasingly difficult due to competing priorities.

It is expected that Ukraine takes a more prominent role in management and financing during the major construction phase at the Chernobyl site leading to a sustainable Ukrainian management of the facilities once the NSC is commissioned.