THE STATE SPECIALIZED ENTERPRISE
“CHERNOBYL NUCLEAR POWER PLANT”

The State Specialized Enterprise “Chernobyl NPP” (SSE ChNPP) is the enterprise on power plants units decommissioning and Shelter Object transformation into environmentally safe system. SSE ChNPP is created on the base of Chernobyl NPP according to the Decree of President of Ukraine № 1084/2000 dated 25 September 2000 and Decree of the Cabinet of Ministers of Ukraine № 399 dated 25 April 2001.

Chernobyl NPP is the operating organization (operator) of nuclear installations of this NPP at the stage of their decommissioning and overcoming beyond designed accident consequences and of the facilities for Radioactive Wastes Management and temporary storages according to the legislation of Ukraine.

The main tasks of Chernobyl NPP are the following:

- Ensuring of safety nuclear installations operation, facilities for radioactive wastes management and other equipment of this NPP;
- Safe decommissioning of Chernobyl NPP Units 1, 2, 3 and nuclear power plants of Ukraine;
- Shelter Object transformation into ecological safe system;
- Safety ensuring during management of radioactive wastes accumulated at the site of this NPP and Exclusion zone of Chernobyl NPP and also wastes generating during decommissioning and Shelter Object transformation into ecological safe system;
- Safety ensuring during Chernobyl NPP’s spent nuclear fuel management;
- Construction and operation of infrastructure facilities necessary for Chernobyl NPP decommissioning and Shelter Object transformation into ecological safe system;
- Personnel training and skills improvement;
- Environmental monitoring in zone of Chernobyl NPP location;
- Technologies development, accumulation and use of scientific and technical experience related to decommissioning of nuclear installations, overcoming of beyond designed accident consequences and construction and use of storage facilities for radioactive waste temporary and long term storage;
- Organization, coordination and implementation of scientific-applied researches, introduction of scientific technical and other developments, making contacts with scientific institutions, including foreign ones;
- Participation in the works coordination and implementation within the international projects related to decommissioning of Chernobyl NPP and Shelter Object transformation into environmentally safe system.

Currently activity of Chernobyl NPP is carried out in following areas:

- shutdown Chernobyl NPP Units maintenance in safe condition;
- nuclear and radiation safety assurance;
- ChNPP Units operation termination;
- Nuclear Fuel Management;
- Radioactive Waste Management;
- ChNPP preparation for decommissioning;
- Shelter object current safety assurance;
- Shelter Implementation Plan realization.

Peculiarities of legal relationship during Chernobyl NPP Units decommissioning, transformation of the destroyed fourth Unit of this NPP into ecologically safe system, social protection of Chernobyl NPP personnel are regulated by the Law of Ukraine “On the general principles of the further Chernobyl NPP operation and decommissioning and destroyed fourth Unit of this NPP transformation into ecologically safe system ” N 309-XIV dated 11.12.1998 with updating.

Last of operational Units - Chernobyl NPP Unit three was shutdown on December 15, 2000. 9051 persons worked at the moment of Chernobyl NPP shutdown. During past period number of ChNPP’s
employers was decreased almost twice. Thus fundamental changes in functions and structure of skilled personnel, financial, economic and industrial activity, basic assets of the enterprise were carried out.

In 2000-2003 with the purpose of Chernobyl NPP shutdown social consequences mitigation the top-priority task of workplaces retention has been solved on the basis of new kinds and principles of activity development. In this connection after plant shutdown 5 new enterprises, two international laboratories were created on the basis of Chernobyl NPP property, that allowed to prevent unemployment increasing in Slavutich. It was succeeded to avoid serious social conflicts, to preserve Chernobyl NPP personnel.

For services market development at other facilities of nuclear industry enterprise "Atomremontservice" was created in NEGC "Energoatom" structure on the basis of ChNPP rebuild service where actually more than 700 persons work, more than 300 of them are former ChNPP employers. Emergency training center of NEGC "Energoatom" was created on the basis of emergency actions control center of Chernobyl NPP.

SAFETY ASSURANCE

State Specialized Enterprise "Chernobyl NPP" ensures maintenance in safe condition shutdown Units 1, 2, 3, "Shelter" object and facilities of Chernobyl NPP’s industrial site.

Chernobyl NPP is located at Exclusion Zone territory with high levels of radioactive contamination. ChNPP structure includes three Units with RBMK – 1000 reactor installations with electric capacity 1000 MW each, "Shelter" object - engineering construction localizing destroyed as a result of beyond designed accident Unit 4, spent nuclear fuel storage, RAW storage, starting-up reserve heating plant, a cooling pond and other facilities and systems of an infrastructure.

Unit 1 is finally shutdown in November 30, 1996 and it is at the stage of the operation termination. Reactor installation is borough in the status of "final shutdown". More than 1000 Spent Fuel Assemblies (SFA) are stored in cooling pools.

Unit 2 is shutdown in October 11, 1991 as a result of a fire occurrence in a turbine hall. Reactor installation is borough in the status of "final shutdown". More than 1000 Spent Fuel Assemblies are stored in cooling pools.

Unit 3 was shutdown in December 15, 2000 according to the Decision of the Cabinet of Ministers of Ukraine "On ahead of schedule power Unit 3 shutdown and Chernobyl NPP final closure". Reactor installation is borough in the status of "final shutdown". In September 2010 Unit was completely unloaded from Spent Nuclear Fuel.

Spent Fuel Storage Facility (ISF-1). At Chernobyl NPP Spent Fuel Assemblies are stored in Wet type storage facility (ISF-1) and in cooling pools for Spent Nuclear Fuel at Units 1 – 2.

ISF – 1 is intended for acceptance and interim storage of Spent Fuel Assemblies, transported from Units reactor compartments after preliminary cooling.

During operation Chernobyl NPP accumulated at its site about 21 thousands Spent Fuel Assemblies. To the date more than 18 thousands Fuel Assemblies are located in five compartments of ISF-1 cooling pool, which was commissioned in 1986. Available design capacity of ISF-1 doesn't allow placing of all ChNPP's SFA for long term storage.

Shelter Object represents the set of the constructions formed from damaged constructions of Unit 4 and from constructed after the accident new constructions and systems serving for the monitoring and post accidental situation management. The "Shelter" object is determined as destroyed by beyond designed accident Unit 4 on which immediate measures on accident consequences elimination and on its condition monitoring assurance are executed by Decision of the State Regulatory Body. According to the document "Radiation Safety Norms of Ukraine (RSNU-97/D-2000) the "Shelter" object is classified as: "temporary surface storage (temporary storage) of unorganized RAW".

Fuel Containing Materials condition monitoring and radionuclides content in air, water and air stream (approximately 20000 samples per year), the monitoring of a building constructions condition, the radiation-technological monitoring are provided at the "Shelter" object. Data of information measuring system "Finish", FCM monitoring system "Signal" are used with the purpose of the "Shelter" Nuclear and Radiation Safety monitoring. Experimental system "Pilot" is in operation.
It is provided procedural maintenance of the Shelter object - dust suppression in destroyed reactor (12 times per year) and in Shelter’s premises, dust suppressive compositions application, decontamination of premises, equipment, surrounding territory, maintenance and repair of the equipment.

All current and transforming activity at the Shelter object is aimed on protection of the personnel, the population and an environment against influence of radioactive materials, presenting in the Shelter and on its industrial site.

The shutdown Chernobyl NPP remains to be a Nuclear Facility. In the view of Safety it continues to be in the same legal and procedural environment as an operational nuclear plants.

The principal goal of the State Specialized Enterprise “Chernobyl NPP” consists in Nuclear and Radiation Safety assurance during all stages of Units decommissioning and Shelter object transformation into ecologically safe system.

The decision on Power Units decommission and Chernobyl NPP final closure has been made before Units design resource exhausting, that has no analogues in domestic nuclear engineering practice. Normative base of Ukraine and branch standards in sphere of nuclear installations decommissioning require subsequent improvement and development with the purpose of more complete requirements regulation to NPPs life cycle stages and to kinds of activity, implementing by operating organization during these stages.

In connection with absence not only national but also world experience in liquidation of accidents consequences similar to the accident of 1986, Shelter object transformation into ecologically safe system is the most difficult task. Shelter object’s peculiarity is presence of Fuel Containing Materials, representing long-term hazard for the actual and future generations in its premises.

ChNPP decommissioning demands parallel performance of works on Units preparation for decommissioning and decommissioning. That includes construction of necessary facilities for Spent Fuel (SF) and RAW Management, new technologies and equipment application, Shelter object stabilization measures realization, necessary normative and technical, design and operational documentation development and so forth.

Chernobyl NPP Power Units are shutdown. However, the task of Safety assurance as well as earlier remains to be topical.

Preparation for ChNPP decommissioning
On March 22, 2002 the State Nuclear Regulation committee of Ukraine has issued given the License to SSE ChNPP for ChNPP decommissioning. Earlier, the License for Shelter object operation and transformation into ecologically safe system has been obtained on December 30, 2001. Chernobyl NPP Units decommissioning has been started in the extremely unfavourable conditions: absence of CHNPP decommissioning program and design and necessary infrastructure (facilities for accumulated during operation RAW processing).

CHNPP decommissioning stages
According to the National Program of Chernobyl NPP decommissioning and Shelter object transformation into ecologically safe system there are following stages of ChNPP decommissioning:

- Shutdown (preparatory stage for decommissioning) – stage, during which nuclear fuel will be unloaded from units and transported in Spent Fuel Storage facility, intended for long-term storage. Term of completion – not earlier, than in 2013;
- Final Shutdown and Preservation of reactor installations. Within this stage reactors and most contaminated equipment will be preserved (tentatively till 2022);
- Safe enclosure of the reactor installations within the time, during which natural decreasing of radioactive radiation up to the acceptable level should occur (tentatively till 2045);
- dismantling of reactor installations. Dismantling of the equipment and site cleaning will be performed with the purpose to remove in maximum restrictions and to release from regulating control (tentatively till 2065).

Decommissioning tasks
According to the requirements of General provisions of Safety assurance during Nuclear Power Plants and Research Nuclear Reactors decommissioning, the following tasks should be performed during ChNPP decommissioning:

1. Safety assurance during Units 1,2,3 decommissioning.
2. Protection of the personnel, population and environment against harmful influence ionizing radiations and protection of the future generations.
3. Bringing of power units 1,2,3 in a condition excluding possibility of subsequent use of this power installations for the purposes for which they have been constructed.
4. Performance of a complex of measures to achieve at the territory occupied by units 1,2,3 and auxiliary constructions, conditions which as much as possible reduce restriction for utilization of this territory. That stipulates:
   - Step-by-step liberation from ionizing radiation sources, subject to the control;
   - A cancellation of restrictions and reductions of the radiation control in supervision zone and in sanitary - protective zone of ChNPP.

**Defining of ChNPP final status**

As ChNPP is being within Exclusion Zone contaminated with radioactive substances due to 1986 accident, and Unit 3 has a common building structure with the Shelter, full removal of restrictions for ChNPP site is inaccessible in near future.

Taking into account the lack of prospects for constructing new energy or other economic facilities on site, the bringing of Chernobyl NPP area to “green field” condition is accepted as inexpedient.

On this basis, Chernobyl NPP Decommissioning Concept is accepted, where the most reasonable final purpose is a condition, which could be conditionally defined as “brown spot”. The main criterion of mentioned final purpose is achieving the levels of restricted material release from regulating control accepted for this facility.

At this, considering Chernobyl NPP location within 10-km Exclusion Zone contaminated with long-lived radionuclides, and availability of bulk building structures within Exclusion Zone, it is inexpedient to perform full dismantling of building structures under ChNPP decommissioning. Such task should be solved under Exclusion Zone remediation.

Thus, the final status during Chernobyl NPP decommissioning is dismantling of equipment unnecessary for ChNPP activity and clean-up/decontamination of building structures to the levels of restricted release from regulating control.

Such levels are prescribed by special normative documents approved by the Ministry of Health of Ukraine. Numerical values of levels define RAW amount to be generated during ChNPP decommissioning.

**Planning and organization of works**

According to accepted Chernobyl NPP Decommissioning Program, the completion of Chernobyl NPP decommissioning and Shelter transformation into ecologically safe system will require about 70 years.

Planning and organization of works at ChNPP shutdown stage at the moment is carry out according to the National Program of Chernobyl NPP decommissioning and Shelter object transformation into ecologically safe system became effective since January 2, 2010.

NDP contains first-priority actions, which should be performed within the period 2009 – 2013 during Chernobyl NPP Shutdown stage and Shelter object transformation into ecologically safe system. The State Budget of Ukraine is the main source of National Program financing.

As a result of the Program implementation till 2013, the following is provided:

- Complete operation of Chernobyl NPP Units and obtain a permission for implementing Final Shutdown and Preservation stage;
- Create efficient system for radioactive waste management at Chernobyl NPP;
- Complete construction and commissioning of new storage facility for spent nuclear fuel (ISF-2);
- Complete construction and commissioning of New Safe Confinement over the Shelter;
• Improve system of social protection for Chernobyl NPP employees;
• Provide transparency of issues related to safety of Chernobyl NPP decommissioning and Shelter transformation into ecologically safe system.

Activity at the Shutdown stage is developed in details and stated in the “Program of Chernobyl Units 1, 2, 3 shutdown”, approved according to the established procedure. Consolidated Plan-schedule of works, in which necessary funds for its implementation, term and responsible persons are reflected, is developed annually. Therefore, program of works for the nearest 5 years is known. It allows to perform annual comprehensive planning of the activity and to improve environmental safety at ChNPP site.
Construction of infrastructure facilities (ISF-2, LRTP, ICSRM, SRAW primary packing and concrete containers manufacturing) is under way within the framework of the international technical assistance according to the Memorandum of 1995 for ChNPP decommissioning needs.

**INTERIM STORAGE FACILITY (ISF-2)**
ISF-2 construction is financed from Nuclear Safety Account in European Bank for Reconstruction and Development (EBRD).

ISF-2 Facility is intended for Spent Fuel Assemblies (SFA) and Additional Absorbers (AA), currently stored at Chernobyl NPP, acceptance, preparation for storage and storage.

**ISF-2 Facility capacity:**
ISF-2 will provide acceptance for storage, preparation for storage and storage within 100 years more than 21000 SFA RBMK-1000 with productivity 2500 SFA per year.

**ISF-2 will consist of 2 parts:**

1. **Installation for Spent Fuel preparation for storage (ISFPS)**
   ISFPS function is preparation for storage and packing more than 21 thousand SFAs, about 2 thousand AAs and more than 23 thousand extension roads, transported from ChNPP Units 1, 2, 3 and from ISF-1. Installation is designed to ensure the minimal annual capacity for processing of 2500 SFAs or AAs.

2. **Spent Fuel Storage Zone (SFSZ)**
   Following operations is carrying out in SFSZ:
   - Transportation of the canisters, filled with Spent Nuclear Fuel from ISFPS in SFSZ with canisters manipulation and transportation system (CMTS);
   - loading of canisters in horizontal concrete storage modules (CSM) with a design life-time 100 years.
   - Storage of canisters with Nuclear Fuel within 100 years.

**For information:**
At Chernobyl NPP Spent Fuel Assemblies are stored in Wet type storage facility (ISF-1) and in cooling pools for Spent Nuclear Fuel at Units 1 – 2.

During operation Chernobyl NPP accumulated at its site about 21 thousands Spent Fuel Assemblies. To the date more than 18 thousands Fuel Assemblies are located in five compartments of ISF-1 cooling pool, which was commissioned in 1986. Available design capacity of ISF-1 doesn’t allow placing of all ChNPP’s SFA for long term storage.

20.12.1995 “Memorandum of Understanding between Governments of G7 countries, Commission of European Community and Government of Ukraine about Chernobyl NPP shutdown” has been made.

According to the Comprehensive Program of Chernobyl NPP decommissioning, Interim Storage Facility (ISF-2) for Spent Nuclear Fuel is a condition for transition to the second stage of Chernobyl NPP decommissioning.

With the purpose to liberate ISF-1 and ChNPP Units from the Spent Nuclear Fuel and Spent Additional Absorbers Cabinet of Ministers of Ukraine issued Resolution dated November 29, 2000 No 1747 about necessity to construct Dry Type Storage Facility for Spent Nuclear Fuel.

Taking into account available in Ukraine and global experience of SF Management as result of open international tender, the dry storage in the tight canister located in ventilated concrete modules has been chosen for Chernobyl NPP’s SF.

12.11.1996 Grant Agreement No006 was signed between European Bank for Reconstruction and Development (EBRD), Government of Ukraine and Chernobyl NPP which was ratified by Verkhovna Rada of Ukraine 18.03.1997. The purpose of this Agreement is financing of facilities construction intended for Chernobyl NPP decommissioning, including Interim Storage Facility (ISF-2).

18.07.2007. Decision about Contract awarding to Holtec Int. Company for completion of Spent Nuclear Fuel Storage Facility construction and about funds allocation for this Project completion was made at Nuclear Safety Account Donors Assembly meeting.
17.09.2007. Contract for completion of Spent Nuclear Fuel Storage Facility construction was signed with Holtec Int. Company.

LIQUID RADIOACTIVE WASTE TREATMENT PLANT (LRTP)
Construction of LRTP is financed from Nuclear Safety Account of European Bank for Reconstruction and Development (EBRD) and contribution of Ukraine.

LRTP is designed for treatment of liquid radioactive waste accumulated during operation and those generated during ChNPP decommissioning, and operational LRW of Shelter Object.

LRTP is also designed for LRW treatment during 10 years of operation. Its minimal designed capacity is 2,500 m$^3$ of non-treated LRW per year.

**LRTP consists of:**
- Facility for liquid radioactive waste (LRW) removal from existing storage facilities;
- Facility for LRW transportation to treatment facility;
- Facility for treatment and cementation of LRW with purpose of containment and immobilization.

**Work progress:**
Currently, the Liquid Radioactive Waste Treatment Plant (LRTP) is in a status of “incomplete construction”. SSE ChNPP is performing the maintenance of systems that ensure activity of the facility.

Pursuant to the decision concerning the further financing of the LRTP completion that was taken on July 2007 at the Assembly of Nuclear Safety Account donor countries, the SSE ChNPP jointly with Improving Safety PMU are performing activities on preparation and carrying out of tender procedures in accordance with the EBRD Procurement Policies and Rules.

INDUSTRIAL COMPLEX FOR SOLID RADIOACTIVE WASTE MANAGEMENT (ICSRM)
Designing and construction of Industrial Complex for Solid Radioactive Waste Management is financed by European Commission and Ukraine.

This Complex includes three facilities for solid radioactive waste management, closed into unified technological cycle.

ICSRM is designed for acceptance, treatment and/or disposal of SRW accumulated during operation period and those generated during Chnpp decommissioning and operational RAW of Shelter Object.

**Lot 0:** Temporary storage facility for low and medium-level long-lived waste and high-level waste (LML LLW and HLW) at liquid and solid waste storage facility (LSWF).

**Lot 1:** Facility for removal of all-type solid radioactive waste from existing solid waste storage facility (SWSF). Work capacity is removal of 3 m$^3$ of RAW per day; operational life cycle is 30 years.

**Lot 2:** Plant for sorting all-type solid radioactive waste and treatment of low and medium-level solid waste (SRTP). Work capacity is 20 m$^3$ of non-treated waste per day; work capacity of incineration facility is 50 kg/h (SRW), 10 kg/h (LRW); work capacity of cementation facility is 10 m$^3$ per day; facility for LML LLW and HLW packaging is 1.5 m$^3$ per day; capacity of temporary storage facility for LML LLW and HLW is 3,500 m$^3$, operational life cycle is 30 years.

**Lot 3:** Specially equipped near-surface storage facility for low and medium-level short-lived solid waste (SESFSRW). Capacity is 55,000 m$^3$ of waste packages; equipment operation lifetime at the stage of filling is 30 years; period of state monitoring of enclosed storage facility is 300 years.

Two first Lots are under construction on Chernobyl NPP site, and Lot 3 is constructed on “Vektor” site within Exclusion Zone.

All Contracts works are completed. Contractor received Dead of facilities acceptance. 18.01.2010 it was signed the Contract for assistance in “hot” tests implementation between EC and NUKEM Technologies GmbH. 13.05.2010 State Nuclear Regulation Committee of Ukraine (in frame of licensing for decommissioning) issued separate permission to Chernobyl NPP for ICSRM commissioning. In compliance to this document SSE Chnpp obtained the permission to carry out “hot tests” of the installation for retrieval of all types of solid radioactive wastes from the existing SRW storage facility (Lot 1) and of the plant on sorting of all categories solid radioactive waste and processing of Low and Intermedium Level Waste (Lot 2).
Analysis of remarks based on the results of pilot operation of the systems and installations of Lots 2, 2 is in process. The work with the Contractor’s Representative aimed on defects elimination according to warranty obligations is under way.

UNLOADING OF FUEL FROM UNIT 3

Works on fuel unloading from Unit 3 in ISF – 1 were started on January 22 of this year. Before to start unloading, plant’s personnel developed and implemented Design of ISF-1 upgrading, aimed on this facility safety improvement, taking into account all Regulator’s (SNRCU) requirements.

Fuel unloading from Unit 3 is necessary condition for implementation of project linked in particular to New Safe Confinement (NSC) construction. At the moment the works on preparation for construction of this unique structure are underway. Decision on necessity to construct new ventilation stack (NVS) for Unit 3 needs, storage facility for Shelter object’s liquid and solid waste, dismantling of ChNPP’s ventilation stack 2, impacting on NSC sliding in the designed position is substantiated in conceptual design for NSC.

Permission on SNF unloading in ISF-1 was obtained on January 19, 2010, and on January 22 the first transportation basket was sent in ISF-1. According to the schedule every week four transportation basket were transporting in ISF-1.

Manufacturing of some types of equipment, necessary for SNF unloading by ChNPP’s personnel provided significant economy of time and budget funds. In particular, plant’s subdivisions ensured manufacturing of 400 “short” casks. Manufacturing of them by own forces provided significant economy of budget funds and significant reduction in the volume of solid radioactive waste.

COMPLEX ON MANUFACTURING OF STEEL DRUMS AND REINFORCED CONCRETE CONTAINERS FOR ChNPP RADIOACTIVE WASTE STORAGE

Designing and construction of a complex on manufacturing of the steel drums and reinforced concrete containers for ChNPP Radioactive Waste storage is financed by the European Commission and Ukraine within “TACIS Program on nuclear safety ensuring: assistance to Ukraine in radioactive waste and spent fuel management”.

This complex is referred to the infrastructure necessary for Chernobyl NPP decommissioning. The implementation of this Project ensures the production of packages for safety radioactive waste management (collection, transport-cargo procedures, storage, reprocessing, transportation and disposal).

Capacity of the main facility is 34 250 metal drums and 700 reinforced concrete containers per year.

Constructional site is located at the area of the Construction base DTMC-1 in Slavutich, Kiev region.

Contractor: Corporation «Ukrtransbud», Ukraine.
SHELTER OBJECT TRANSFORMATION INTO ECOLOGICALLY SAFE SYSTEM

According to the signed in December, 1995 Memorandum of Understanding between the Government of Ukraine, G7 countries Governments and European Commission on Chernobyl NPP shutdown” within the framework of TACIS Project “Chernobyl Unit 4, Short- and long-term measures – Measures 2+4” the Recommended Course of Actions was developed in which potential short- and long-term measures have been determined and the complex of urgent measures, consisted of the following phases was proposed:

Phase 1. Stabilization and other short-term measures.
Phase 2. Preparation for transformation into ecologically safe system.
Phase 3. Transformation into ecologically safe system.

The stabilization stage, necessity of which was considered by the Ukrainian side earlier has been emphasized in the project. The purpose of a stabilization stage is potential risks reduction, protection of an environment against the most probable event – construction destructions and connected to it intense radioactive dust release.

Stabilization

Project “Stabilization” started in 2004. As a result of its implementation it was achieved collapse risk reduction for the term 15 years. During the Project it was reinforced Western and Eastern supports of “Mammoth” beam, deaerator stack toper floor of the frame and covering plates, plate-sticks fastening and others. Reinforcement of the Shelter object western section is among the most difficult and large-scale project measures. It included construction of the metal constructions in the local zone near the western buttress wall to reinforce and transfer 80% of loading from B1B2 Beams, supporting Shelter’s roof. Final Project measure - local sealing (repair) of the light roof above the Central Hall of the destroyed ChNPP Unit four was completed in August 2008. The main purpose of these works was minimization of precipitations penetration (rain water, snow) inside the Shelter object and to restrict distribution of radioactive substances from the Shelter object. That has improved radiation situation and in future will influence favorably on performance of works, connected to NSC and others contracts.

Deed of acceptance in operation of the completed by construction facility “Shelter object Stabilization measures” was signed by the State Commission on 06.11.2008.

One of the most important Project’s achievements is works implementation without the damage for the personnel’s health. Safety was provided by the broad range of the specially developed measures and rules, strictly observed at the facility, in particular, unprecedented shielding of working places, that allowed to reduce significantly doses to the personnel.

New Safe Confinement

New Safe Confinement is multifunctional complex for Shelter object transformation into ecologically safe system.

To ensure nuclear, radiation and industrial safety of NSC facility and its effective operation with involvement of minimum quantity of the operational personnel it is stipulated to create Integrated NSC Management System.

It will be achieved by NSC construction:

- Improvement of radiation safety level and restriction of radiation influence at the population, personnel and environment for the period of operation 100 years and more;
- reduction of the collapse probability and its consequences;
- SO Nuclear Safety improvement;
- Ensure realisation of the strategy of SO transformation into ecologically safe system due to the durability of NSC constructions, possibility to dismantle instable constructions of the existing Shelter and Fuel Containing Materials retrieval.

Preparatory works for New Safe Confinement construction

Since bands of foundation for New Safe Confinement sliding pass through the territory at which some ChNPP facilities are located, before to start construction it was necessary to prepare sites for
tranches and to arrange site for remote assembly of the confinement. For that it was necessary to dismantle berm of the Pioneer wall, to dismantle, to carry at another place and to reinstall drilling site constructions, to implement measures ensuring functioning of the physical protection system etc. To the date the works of the 2 phase of the first stage of the project on site preparation for NSC construction – earth works, necessary for tranches of northern and southern foundation bands for future New Confinement assembly site. These works were very complicated by sufficiently high level of contamination. Besides, during earth excavation from tranches many times it was revealed large-dimension machinery, abandoned by Shelters builders (1986 — 1987) and covered by protective layer. In August 2010 Contractor started next stage of works – driving piles in NSC assembly zone foundations and concreting of Arch lifting towers foundations.