

**STATEMENT OF INTENT**  
**of the construction of the New Safe Confinement above the Object 'Shelter' of the**  
**Chernobyl Nuclear Power Plant**

**1. Employer:** State Specialized Enterprise «Chernobyl NPP» (SSE ChNPP)

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**2. Location of the Construction Site:** The NSC construction site is located within the boundaries of the first radiation regime zone included into the Exclusion Zone and the Zone of Absolute Resettlement, in 44 km to south-west from Slavutich town and in 115 km to north from Kyiv.

**3. Characteristics of the Activity (Facility):** The creation of protective facility – new safe confinement shall facilitate the achievement of the following goals:

- To protect personnel, population and environment from exposure by the sources of nuclear and radiation hazards associated with the existence of the Shelter object (SO);
- To provide for conditions for performing of activity on SO conversion into the ecologically safe system, in particular for dismantling / strengthening of unstable SO structures, removal of fuel containing materials, and handling of the radioactive waste.

In accordance with document SIP-P-PM-21-330-EXN-004-01 “Strategy for further implementation of the NSC project”, the NSC project is divided into three phases.

- The first stage provides for the implementation of preparatory work, which should facilitate the safe and efficient construction of the NSC directly.
- The second phase is the construction and commissioning of the NSC. The second phase provides for two start-up complexes. The scope of the first commissioning stage (CS-1) includes the construction of protective facility with the technological life-support systems and the necessary infrastructure. The scope of the second commissioning stage (CS-2) will include the creation of infrastructure to carry out the dismantling of the SO unstable structures.
- The third phase will involve the implementation of deconstruction of SO unstable structures.

New safe confinement is the complex including the following basic buildings and facilities:

- Metal Arch with suspended structures for the crane equipment, systems of life-support, control and management (Arch);
- Existing structures of ChNPP Second Commissioning Stage the Arch structure joins to with its end wall;
- Technological building with air locks;
- OCF building;
- Complex of buildings and facilities of the technical area.

NSC fully covers the SO and the territory directly adjacent to it. It is designed to implement the entire set of works on SO conversion into the ecologically safe system.

Technical features of NSC:

- Basic dimensions of the NSC Arch structure: width - 257,4m; length - 162,0m; height - 108,7m;
- Mass of the steel Arch structure - 18 000tons;
- Service life of NSC – 100 years with possibility of extension.

**4. Social and Economic Necessity for the Scheduled Activity:** State significance of overcoming the consequences of the 1986 accident at the Chernobyl nuclear power plant is defined in the Constitution of Ukraine, international agreements ratified by Ukraine, as well as a number of legal acts of nuclear and environmental legislation of Ukraine. The conversion of the destroyed Unit 4 of Chernobyl NPP into ecologically safe system is one of the most important aspects of overcoming the consequences of the accident.

#### **5. Need in Resources during Construction and Operation:**

**Land Resources:** NSC construction site is located within the territory of SO local zone and Industrial site, which in their turn are located within the Chernobyl NPP Industrial Site. During operation, NSC shall take the territory occupied nowadays by SO.

**Raw Resources:** During the construction activity the main construction materials will be the concrete for foundations and steel structures for the Arch. The use of mainly Ukrainian materials for foundations is foreseen.

**Power Resources:** The heating energy and electricity will be used in the heating, ventilation and air conditioning systems, control and management systems, systems of connection and notification, system of fire extinguishing, lighting system, system of water supply and sewage, and system of dust suppression.

The maximum calculated capacity of the consumers of the heating energy is 3300 kWt, maximum estimated capacity of consumers of power in NSC is 5500 kWt.

**Water Resources:** During construction activity the water shall be required for manufacturing of concrete and facilitation of the sanitary and hygienic labor conditions. During operation, in NSC systems, the potable water shall be used for the sanitary and industrial needs, hot water for sanitary and industrial needs, and process water for fire extinguishing.

**Man-power:** During construction of NSC CS-1 the recruitment of the population from nearby settlements Kyiv region, Chernigov region, and Slavutich, Chernigov towns, and Kyiv city. During the peak loads of construction activity it is planned to involve up to 1000 workers and 300 engineers.

During NSC operation 120 persons shall be required given the work is organized in one day-shift. The division operating NSC shall be the shop included into the organizational chart of SSE ChNPP.

**6. Transportation Provision (during Construction and Operation):** The transportation freight flows from the enterprises – manufacturers to the Exclusion Zone may be provided with the railway, automobile and river transport. For the purposes of movement of vehicles and construction machinery on the construction site the existing roads and specially constructed temporary roads coated with crushed stone shall be used.

**7. Ecological and Other Limitations of the Scheduled Activity:** The project activities are mostly limited by the requirement that the construction and operation of the NCS shall not result in worsening of the environment state at the construction site and shall not violate the radiation

and health & safety criteria as established in the Radiation Safety Standards of Ukraine (NRBU-97) and 'Radiation Protection against Potential Exposure (NRBU-97/D-2000).

#### **8. Necessary Ecological and Engineering Preparation and Protection of the Territory:**

Under the ordinary conditions of construction and operation of NSC CS-1 no effects on the environment exceeding the permissible levels considering the Exclusion Zone specificity are supposed. Thus, the realization of measures on ecological and engineering preparation and protection of the NSC CS-1 construction territory is not required.

#### **9. Potential Impacts of the Scheduled Activity (during Construction and Operation) on the Environment:**

**Climate and Microclimate:** NSC CS-1 construction does not suppose organization of new sources of heat or moisture release into environment. Therefore, for normal conditions of NSC CS-1 construction, as well as under emergency situations and accidents during construction, any significant modifications of microclimate are not forecasted.

Upon completion of NSC construction, its impact on microclimate will become apparent in the form of the following modifications: reflected and absorbed solar radiation; air flows at adjacent part of ChNPP industrial site; temperature and humidity of environment in close vicinity to NSC; and wind loads on the nearest SSE ChNPP facilities. Such influence shall be of local nature.

**Air Environment:** During NSC CS-1 construction any considerable modifications of existing non-radiation impacts on the air are not forecasted. For normal conditions of NSC CS-1 construction any significant radiation impact on the air is not forecasted.

Under normal conditions of NSC operation total activity of authorized and unauthorized releases from NSC due to current SO and DS releases will be reduced on several orders as compared with such releases which take place at present. NSC CS-1 design shall establish the limits of releases from NSC, under which the maximum activity in the air of ChNPP Industrial Site will not exceed the established at SSE ChNPP reference levels of atmospheric air contamination for free access territory.

**Aquatic Environment:** During NSC CS-1 construction any significant modifications of existing non-radiation impacts on surface waters are not forecasted. For normal conditions of NSC CS-1 construction any significant radiation impact on surface waters is not forecasted as well. On the background of Pripyat river water existing contamination formed by consequences of the accident at ChNPP in 1986 (hereinafter referred to as contamination of Chernobyl origin), additional contamination for normal conditions of NSC CS-1 construction is negligible.

Under normal conditions of operation washout of radioactive substances from NSC CS-1 roof into Pripyat river, as well as direct atmosphere fallouts of design releases of radioactive substances from NSC CS-1 volume on water surface of Pripyat river and its bottom near NSC CS-1 with further drain of radionuclides from water collection sites are the main factors of radiation impact on surface waters. The above factors will not have any negative impact on the background of observed and forecasted concentrations of Chernobyl origin radionuclides in the surface waters of Exclusion Zone.

Non-radiation impacts on hydrogeological environment associated with the impacts of pile fields in erection and service zone will be limited by NSC construction site. Considerable modifications of hydrogeological conditions that can result in rise of ground waters levels and underflooding of new areas of SO lower rooms and other negative consequences on retention of existing balance of ground waters are not forecasted.

Any possible source of radioactive substances flux into ground waters (infiltration of atmospheric precipitation with dissolved radioactive substances from contaminated soil, infiltration of radioactive contaminated surface waters, infiltration of radioactive contaminated waters from the points of radioactive waste temporary localization and SO, liquid radioactive

waste management) will not result in any significant their additional contamination due to normal conditions of NSC operation. Positive influence of NSC regarding radiation impact on ground waters consists in considerable decrease of infiltration of radioactively contaminated waters from SO.

**Soils:** During NSC CS-1 construction non-radiation impacts on soils will be limited by NSC construction site and the sites of NSC construction infrastructure facilities and outside these sites are not forecasted. Additional non-radiation impacts on soils during NSC operation are not forecasted.

Since for normal conditions of NSC CS-1 construction any significant radiation impact on the air is not forecasted, the additional radioactive contamination of soil will be many orders of magnitude less than the existing background Chernobyl contamination even considering accumulation within the entire design period of NSC operation (100 years).

**Fauna and Flora, Reserve Objects:** Non-radiation impacts on flora are limited by NSC construction site. Radiation impact on flora during construction and operation of NSC CS-1 shall be negligible on the background of existing impacts of Chernobyl origin.

During construction and operation of NSC CS-1 any possible source of radioactive substances flux into flora (external exposure, direct deposition of the radioactive substances from the air and entry through the root system from soils) will not result in any significant additional contamination. The radiation impact will be negligible on the background of existing impacts of Chernobyl origin.

Non-radiation impacts on fauna during NSC construction and operation are forecasted insignificant, their considerable part will be temporary and stop upon completion of construction. Radiation impact on fauna due to NSC CS-1 construction and operation is negligible on the background of existing impacts of Chernobyl origin.

Any non-radiation impacts on NRF objects flora and fauna for NSC CS-1 construction are not forecasted. Radiation impact on NRF objects for normal conditions of NSC operation will be negligible due to their distance and insignificant volumes of releases on the background of the existing impacts of Chernobyl origin.

**Social Environment (Population):** NSC CS-1 construction and operation will not have negative non-radiation impacts on population, including on living in EZ persons re-evacuated at their own discretion (“self-settlers”). Under the normal conditions of NSC CS-1 construction and operation the individual effective exposure dose of population, including the persons re-evacuated at their own discretion residing in EZ, will be significantly (orders of magnitude) lower than the quota of dose limit for the reference industrial source allocated for gas – aerosol release ( $40 \mu\text{Sv year}^{-1}$ ) of the reference industrial source as per NRB-97.

**Technogenic Environment:** Non-radiation impacts on EZ technogenic objects for NSC CS-1 construction will be limited to modifications in some utilities operated by SSE ChNPP. Non-radiation impacts under NSC operation will have local character and will not result in additional impacts on technogenic environment outside ChNPP industrial site. Under normal conditions of NSC operation modification of existing conditions of EZ technogenic objects operation is not supposed.

Any possible source of radiation impacts (radioactive contamination of the air and territory as a result of releases, additional exposure of personnel) will not result in any significant additional negative impact on EZ technogenic objects for normal conditions of NSC construction and normal conditions of NSC operation on the background of impacts of Chernobyl origin.

**10. Industrial Wastes and Possibility of their Repeated Use, Utilization, Sterilization or Safe Disposal:** NSC CS-1 design shall foresee the creation of the systems of handling the industrial and radioactive wastes during NSC construction and operation. The systems of

handling of NSC CS-1 operational RAW shall provide for the conditioning of all types of RAW to the state meeting the criteria of acceptance for the effective and created locations of storage and disposal of RAW. All industrial and radioactive wastes produced in course of construction and operation of NSC shall be conditioned and disposed of in EZ.

**11. Scope of EIA Implementation:** Environmental Impact Assessment of NSC CS-1 shall be developed in accordance with DBN A.2.2-1-2003 «Structure and contents of materials of the Environmental Impact Assessment (EIA) during designing and construction of the industrial buildings and facilities».

**12. Participation of Public:** The consultations with the public on the issues of creation of new safe confinement over the Shelter object took place within the period from February till April 2004 due to completion of development of FS (CD) of NSC prior to its approval by the Cabinet of Ministers of Ukraine. The results of undertaken consultations allow concluding on the dominating support by public and other interested parties of the NSC construction project and recognition of it as necessary condition and important stage of Shelter object conversion into the ecologically safe system.

Aiming at information provision to the public related to the planned activity under the NSC CS-1 project, its goals and ways of realization, SSE ChNPP performs the following measures nowadays:

- continue the routine work with the public, in particular as activity of the Information Center of SSE ChNPP, contacts with the public organizations of ecological, professional and scientific and engineering profile, contacts with the mass media;
- schedule to distribute the package of the informational materials with the data related to the ecological consequences of the construction, commissioning and operation of the NSC CS-1 after publishing of the Declaration of the ecological consequences of the planned activity;
- maintain in actual state the information related to this and other projects on web-site of the SSE ChNPP [www.chnpp.gov.ua](http://www.chnpp.gov.ua).