NOTIFICATION TO AN AFFECTED PARTY OF A PROPOSED ACTIVITY UNDER ARTICLE 3 OF THE CONVENTION FOR EIA REPORT IN THE TRANSBOUNDARY CONTEX

1. INFORMATION ON THE PROPOSED ACTIVITY	
(i) Information on the nature of the proposed activity	
Type of activity proposed:	Intermediary storage of the dry spent fuel coming from the nuclear units of Cernavodă Nuclear Power Plant, and building the modules for storage of the dry spent fuel – MACSTOR type modules
Is the proposed activity listed in Appendix I to the Convention?	No (Intermediate Dry Spent Fuel Storage Facility is placed on Cernavoda NPP site)
Scope of proposed activity (e.g. main activity and any/all peripheral activities requiring assessment)	Scope of proposed activity is to extend the Intermediate Dry Spent Fuel Storage Facility (IDSFS) where is temporarily stored the dry spent fuel coming from the nuclear units of Cernavodă Nuclear Power Plant, and to make more efficient the use of the site, in nuclear safety conditions, both for the operating personnel and population, and for the environment. Peripheral activity is represented by the construction activity of the MACSTOR type modules where the dry spent fuel is stored.
Scale of proposed activity (e.g. size, production capacity, etc.)	Currently, according to the initial project, on the site and surface of the approved for IDSFS, it is foreseen the location of a number of 27 modules type MACSTOR 200, arranged in three rows (7 modules on the first row and 10 modules on rows 2 and 3), on a total surface of approx. 24.000 m^2. This project proposes: • extending IDSFS site by the 4th row of modules intermediate dry spent fuel storage, respectively increase the surface to about 31,000 sqm • increasing the number of modules of the type MACSTOR from 27-30 modules, including 9 modules type MACSTOR 200 and 21 modules type MACSTOR400; • building modules MACSTOR type 400 instead of MACSTOR 200 modules from module no. 10 of the row 2; • increasing the number of spent fuel bundles that can be stored in modules type MACSTOR

from 324000 to 612000 spent fuel bundles.

MACSTOR 200 – MACSTOR 400
comparative table

Parameter	**MACSTOR 200**	**MACSTOR 400**
Fuel Cooling Period in the irradiated fuel storage	6 years for the reference fuel	
Average residual heat per bundle, for the reference average burnup and minimum cooling period	6,08 W	
Maximum bundle heat power	9,76 W	
Residual power for the storage basket:		
Average basket	364,8 Watts	
Designed Service Life of the Structure	50 years	
Dimensions		
Length(m)	21,64 m	21,95 m
Width (m)	8,13 m	12,95m
Parameter	MACSTOR 200	MACSTOR 400
Height(m)	7,5 m	7,60 m
Capacity:		
- Number of bundles that can be stored in one module	**12.000 bundles**	**24.000 bundles**
Air circuit configuration	- 10 air inlets (5 at each side) - 12 air outlets (6 at each side)	
The heat dissipated by a module	73 kW (analysed at 78 kW)	145,9 kW (analysed at 146,7kW)
Environment temperature	40°C daily maximum temperature	40°C daily maximum temperature

Except for the width and storage capacity of the module MACSTOR 400, there are no major differences compared with MACSTOR 200, resulting an identical operating mode by compatibility with existing equipment (gantry crane, transfer container, loading guide, etc.).

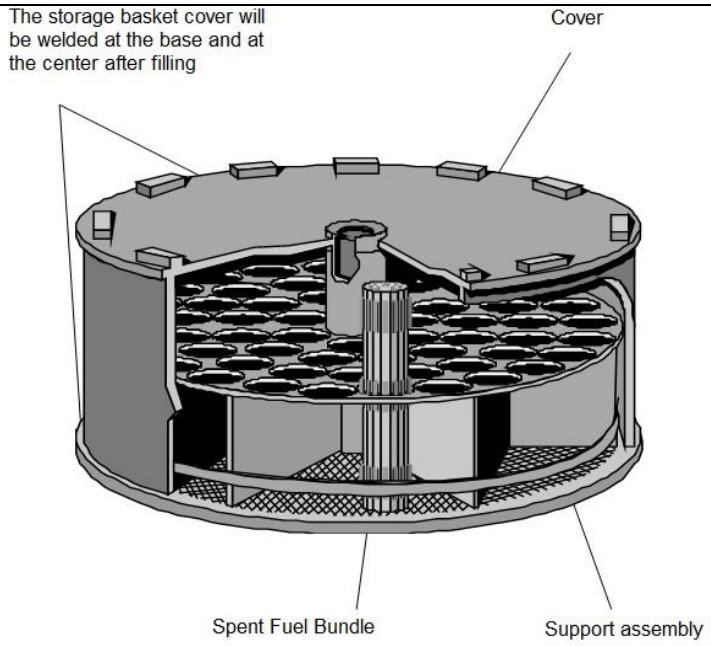
The initial bundles number approved: **324.000 bundles**

The final bundles number - MACSTOR 400 & 200 modules proposed (30 modules)
612.000 bundles

Description of proposed activity (e.g. technology used):

The intermediate solution of fuel storage in Cernavodă NPP is based on the dry storage system type MACSTOR (Modular Air-Cooled STORage) developed by AECL and built in NPP Gentilly, system based on the use of MACSTOR

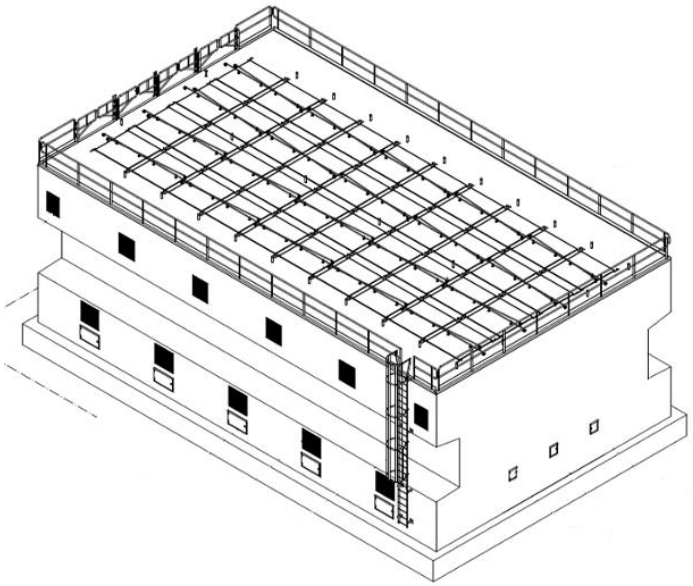
	200 storage module, which in 2000 represent one of the most modern and best storage solutions. Starting with module no. 10, on IDSFS site will be built MACSTOR 400 type modules. Storage modules are monolithic structures made from reinforced concrete, built on a reinforced concrete sub-base slab, on IDSFS site. MACSTOR system uses a dual confining of fuel bundles which ensures three very efficient barriers of retaining of gaseous radionuclides contained in spent fuel: fuel sheath, fuel basket and storage enclosure of storage module. Each MACSTOR400 module has 40 storage cylinders. The storage cylinders are suspended from the upper plate of the module, in a shared cooling cavity. The passive cooling system of the module consists of this cavity, which is provided with a series of air inlets located on the lower part of the module and a series of air outlets located on the upper part of the module. The other module components are: the reverification system of EURATOM / AIEA, drainage and ventilation pipes of cylinders, storage cylinder seismic restraints, sealing plugs, protection weather cover, handrail for operators safe and lightning system and grounding. **Short description of the activities for storage of dry spent fuel** IDSFS objective involves three main activities taking place in three different places on the Cernavodă NPP site, as follows: • at the Spent Fuel Bay (SFB), from the Services Building U1 or U2, in a space of about 3,0 m along row A is done the loading of spent fuel in storage baskets



The spent fuel basket

- at Shielded Work Station (SWS) from U1 or U2, located in a new building adjacent SFB, specially built for this purpose is done loading of storage baskets in the transfer flask and of the transfer flask on the mean of transport

- at the Intermediate Dry Spent Fuel Storage Facility (IDSFS) is done the spent fuel baskets storage; these modules are built in stages, to ensure the storage capacity for periodically discharged spent fuel from the SFB, Unit 1 and Unit 2. Storage module is shown in the following figure:



MACSTOR 400 Module

Transfer of the spent fuel from NPP to IDSFS - is done with a trailer that takes the transfer flask containing a storage basket with bundles and carry it to IDSFS, on a specific route, which is not related to public road.

Gantry crane is used for handling the transfer flask at the storage itself.

Gantry crane for handling transfer container

Loading operations at IDSFS

In the storage area, preparation is done first to achieve the actual operation.

Thus, the auxiliary tackle of the gantry crane is used to position the transfer flask above the storage cylinder that will be loaded.

Before starting the loading operations, the protection plug of the storage enclosure will be replaced by a temporary plug. The loading ring is removed to release the plug. Ventilation and drainage lines of the storage enclosure are kept open in order to ensure that the storage cylinder is drained.

After these preparatory information, will be made the main loading operations.

Operation of Spent Fuel Storage System

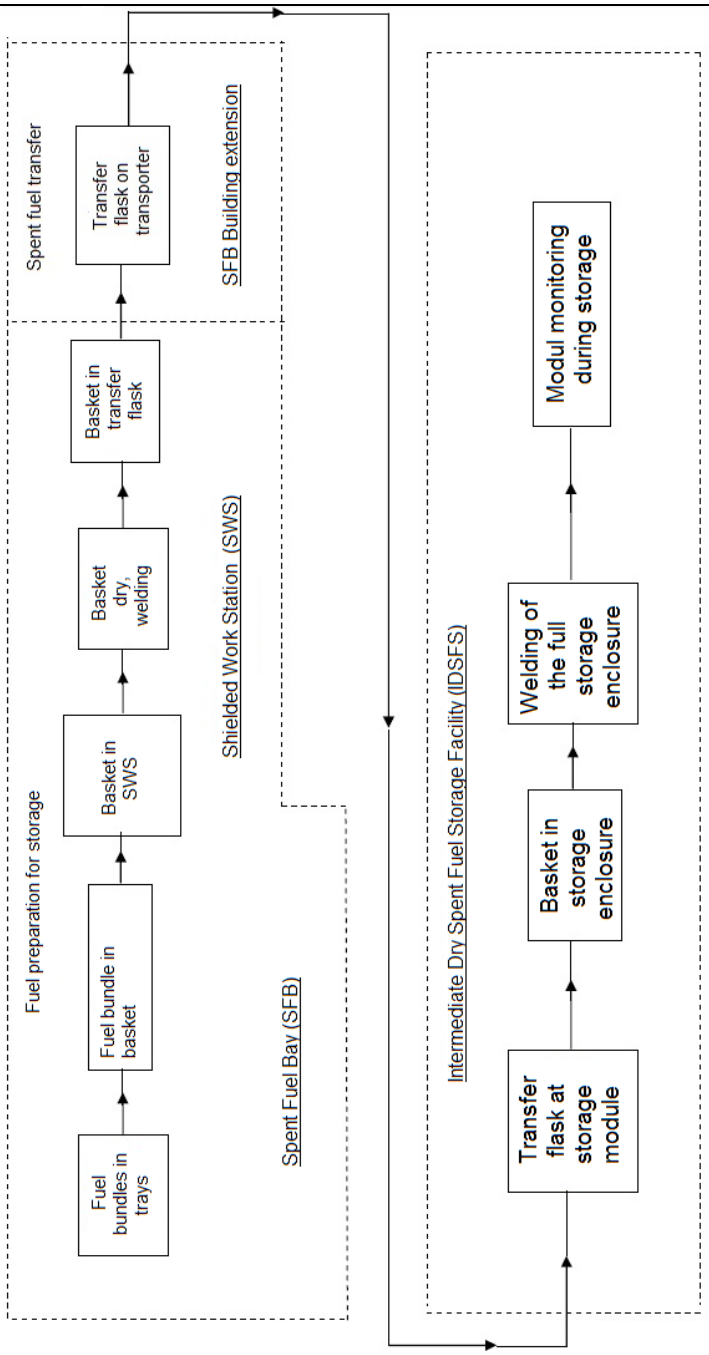
During storage period, the main operations consist of sampling at each storage cylinder to demonstrate that both the basket and the enclosure preserve its barrier capacity.

The cover plate of the reinforcements enclosure is open and the re-circulation pump is connected to the drain and ventilation lines.

Air from storage enclosures will be recirculated through a filter package. Filters are analysed for determination of presence of artificial radioactivity.

Once completed the sampling operations, the monitoring system is disconnected, the

	reinforcements closed and sealed with caps and the cover plate is placed over the reinforcements enclosure. *Removal of the residual heat from the storage module* The heat produced by the fuel bundles is transmitted by conduction, convection and radiation to the external surfaces of the storage basket, and then transferred to the storage cylinder, mainly by convection and radiation. The storage cylinder heat is dissipated by convection in the air inside the cavity module and by radiation to the inner surfaces of the storage module concrete. A set of input and output air holes, arranged in the form of a maze to reduce the spread of radiation, ensure circulation by natural convection, of the cooling air that enters at the bottom and exits at the top of the cooling cavity. To monitor the evolution of structure temperatures during the storage of spent fuel, at module 2 (considered representative for MACSTOR 200) was implemented a system for temperature measurement. In the next image is represented a block diagram of the main activities required to transfer spent fuel from Cernavodă NPP *Unit 1 and Unit 2* at IDSFS.

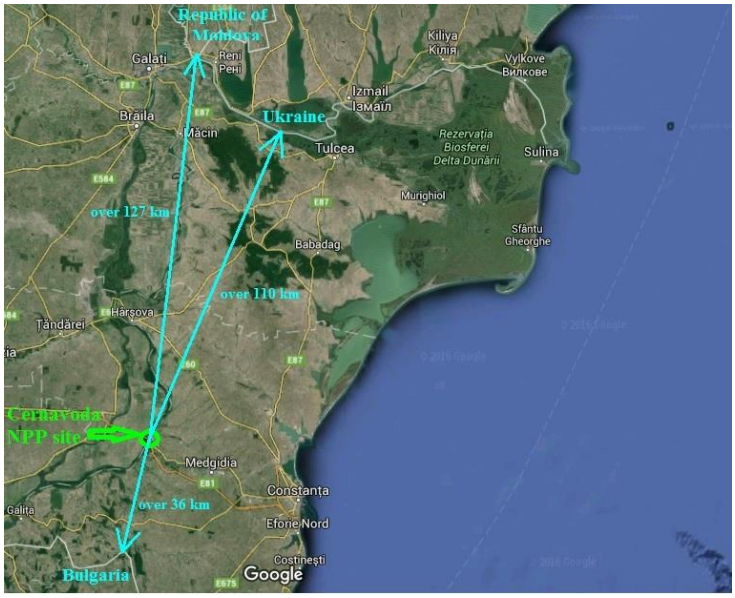


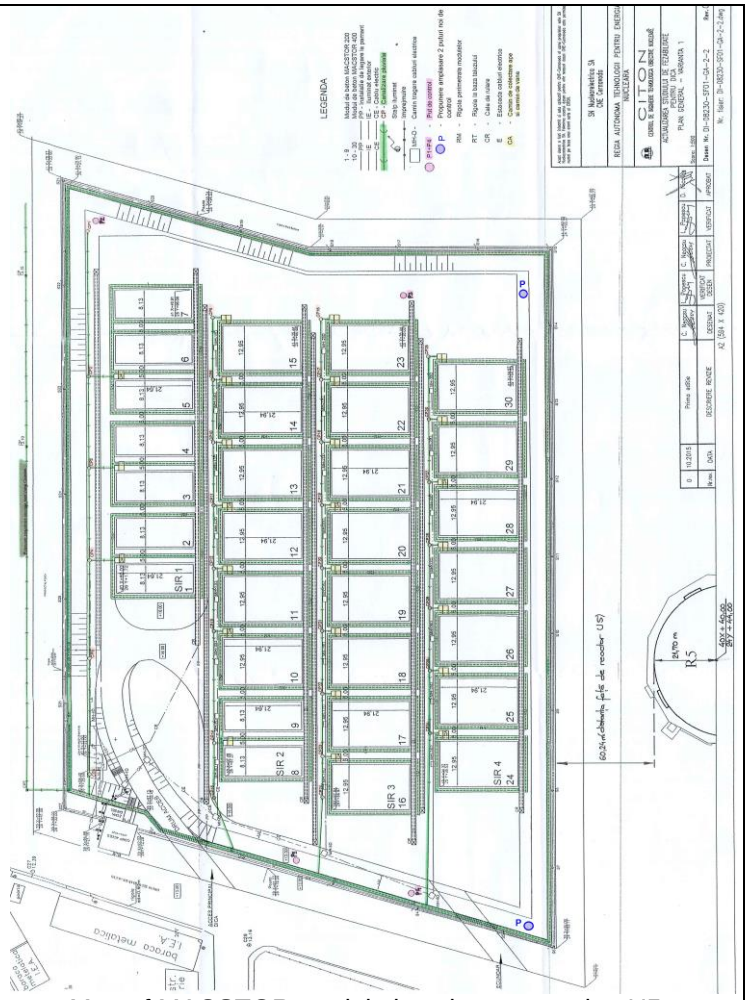
Description of purpose of proposed activity:	**The Intermediate Dry Spent Fuel Storage Facility (IDSFS) has the role of extending the spent fuel storage capacity of the Cernavodă NPP beyond the capacity of the Spent Fuel Storage Bay (SFB), existing on each of the nuclear unit.** By extending the operation period of the 2 nuclear units with an additional operating cycle of 30 years, the site approved now for IDSFS cannot accommodate all the dry spent fuel, this is why it is necessary to extend the storage, according to the technical details presented before at the

	chapter: “Scale of proposed activity”. Thus, extension of IDSFS and efficient use of the site by using MACSTOR400 type modules (starting with module no. 10) are necessary in the perspective of extending the operation period of Units 1 and 2 with another operating cycle of 30 years.
Rationale for proposed activity (e.g. socio-economic, physical geographic basis)	After a period of irradiation of approx. 1 year, spent fuel bundles are transferred to the Spent Fuel Bay (SFB) of that unit. Spent fuel Bay capacity (SFB) was designed for approx. 10 years of plant operation, at an annual average load factor of 80%. However, from the beginning, the plant has maintained a higher load factor and increased rate of accumulation of spent fuel has prompted the need for additional storage capacity. Commissioning of nuclear units at Cernavodă NPP - Unit no. 1 in 1996 and Unit no. 2 2007 - led to a need of achieving and commissioning of Intermediate Dry Spent Fuel Storage Facility (IDSFS) to provide intermediate storage of irradiated spent fuel from the reactor after the temporary storage of it in Spent Fuel Bay (SFB) existing in each unit, in accordance with regulations issued by the National Commission for Nuclear Activities Control (CNCAN), by the IAEA recommendations and international practices regarding the management of spent fuel resulting from the operation of CANDU nuclear units. This project proposes the extension of IDSFS and not the construction of another storage for the dry spent fuel inside or outside the Cernavodă NPP site.
Additional information/comments	-
(ii) Information on the spatial and temporal boundaries of the proposed activity	
Location:	Intermediate Dry Spent Fuel Storage Facility (IDSFS) is located on the Cernavodă NPP platform. The distances from the extended IDSFS on the Cernavodă NPP site - to borders are: • Over 36 km from Bulgaria – the distance is measured in a straight line from the site boundary to the nearest border point • Over 110 km from Ukraine – the distance is

	measured in a straight line from the site boundary to the nearest border point • Over 127 km to the Republic of Moldova – the distance is measured in a straight line from the site boundary to the nearest border points
Description of the location (e.g. physical-geographic, socio-economic characteristics)	The location of Cernavodă Nuclear Power Plant inside which is located the project is situated on the platform resulting from excavations of the former limestone quarry Ilie Barza, approx. 2 km south-east from Cernavodă town and approx. 1.5 km north-east from first sluice of the Danube-Black Sea navigable channel, being bordered to the north by Cismelei Valley and south-west by DJ223C. IDSFS is bounded on the south-east side by the secondary access road to the NPP. Around each nuclear unit are established: • an exclusion area with a 1 km radius – in which no other activities than those carried out in the NPP are allowed, • a low population area - with a radius starting from 1 up to 2 km from the nuclear objective The link between the related services buildings of nuclear units no. 1 and 2 in operation, and the rest of the nuclear power units currently in preservation (in various stages of construction / assembly) and IDSFS site, is made on the existing access roads within Cernavodă NPP platform, as follows: road liaises between all units of NPP platform, from Unit 1 to Unit 5, and a secondary access road (with road connection related to the IDSFS site).
Rationale for location of proposed activity (e.g. socio-economic, physical-geographic basis)	Extension of IDSFS is convenient considering both the existence of the space necessary for extension, and the geotechnical conditions, the quota where the bedrock is situated - Barremian limestone, being high enough to allow the realization of foundations in good technical and economic conditions. Building a new dry spent fuel storage inside or outside Cernavodă NPP site cannot be considered, both from environmental protection and cost efficiency considerations, such as: • Creating an additional area for which should be allocated additional resources for security and protection, monitoring, transport distance, additionally being created a new sensitive point from environmental point of view

	• Location outside Cernavodă NPP precinct was initially studied as an alternative for site selection, and the conclusion reached was that a location outside the power plant would require special transport of radioactive dry spent fuel waste for a long distance, on public roads, an inopportune version in terms of environmental protection.
Time-frame for proposed activity (e.g.: start and duration of construction and operation)	The Intermediate Dry Spent Fuel Storage Facility is a modular construction **allowing phased building, over an extended period as the dry spent fuel, stored intermediately in SFB, should be transferred to IDSFS.** The development of IDSFS has been started in 2001 and will continue in a sequential manner, in order to timely ensure the future needs of storage capacity for Cernavoda NPP. It is expected that the final module will be built in 2047.

Maps and other pictorial documents connected with the information on the proposed activity	 Distance from the borders  Location of IDSFS in Cernavoda NPP precinct and access

	 Map of MACSTOR module location reported to U5
Additional information/comments	-
(iii) Information on expected environmental impacts and proposed mitigation measures	
Scope of assessment (e.g. consideration of: cumulative impacts, evaluation of alternatives, sustainable development issues, impact of peripheral activities, etc.)	In the Presentation Memorandum elaborated for the project was analysed the impact on the environmental factors water, air, soil - subsoil, fauna and flora, on population, the radiological impact, impact on the landscape and historical and cultural heritage, the cumulative impact. Also, alternatives were analysed in terms of: • use of IDSFS site: ▪ using both MACSTOR 200 modules and MACSTOR 400 modules (Alternative 1), the alternative analysed by this project, or ▪ using only MACSTOR 200 modules (Alternative 2) from the analysis resulted that Alternative 1 is the most advantageous • location of IDSFS, with the possibility of making a new dry spent fuel storage inside or outside Cernavodă NPP precinct – it cannot be

	considered from considerations regarding environmental protection and cost efficiency • „Zero" Alternative – respectively not implementing the Project and keeping the actual configuration of 27 MACSTOR200 type modules – dos not represent a viable solution, given that by extending the lifetime of Units 1 and 2 of Cernavodă NPP it is necessary to extend the dry storage capacity of the nuclear spent fuel compared to the initial version
Expected environmental impacts of proposed activity (e.g. types, locations, magnitudes)	***Impact on population and human health*** The dry storage area is equipped with a system of fences consisting of an interface external fence (protection) and an interior fence for Security, which forms an isolated area between them. The security fence is located approximately 16 m away from the storage module. Distance and low dose rates from structures provide a level of radiation dose flow at the boundary fence of the site, below of the project value of 2.5μSv / h (one tenth of the dose rate at the surface of storage structures). Beyond the external fence of the storage area, dose rates will thus be small enough to allow free access of plant personnel. Storage area is also located at a distance of about 0.8 km from the limit of exclusion zone of the plant (Unit 5), to west. At this distance, the radiation that comes from the dry storage area will not contribute to dose for the population during normal operation. *The impact on operating personnel* During transfer operations to storage area and during filling of the basket, equipment design, their location and operating procedures are conceived that workers to be placed away from flask, to limit additional doses received by them. In case of the fuel cooled for 6 years, individual dose is estimated at 20 μSv. At Cernavodă NPP the maximum individual dose received in the transfer of a basket of fuel is 10 μSv. During storage operations, there are transitional periods very short (less than a minute at each loading operation) in which the storage cylinder plug is lifted and moved laterally to allow installation of transfer flask over that cylinder, for storing a fuel basket (plug is moved backwards and reinstalled on the cylinder after storage). In this short periods, the transient radiation dose rate

	near the module exceeds the normal value of project. In this case, scattering contribution due to ambient air (effect "sky shine") is more important than the contribution of direct radiation through the shielding concrete. Dose rates due to the effect of "sky shine" in case of the uncovered storage enclosure (during charging of the 10^{th} basket) were calculated with the MCNP code and compared with those measured at Point - Lepreau. For irradiated fuel cooled for 6 years, it was achieved a maximum dose rate of 93.5 ± 2.06% μSv / h at 1 m above the ground, at a distance of 7.5 m lateral from the enclosure, which corresponds with the measured value of 80 ÷ 100 μSv / h (at ground level). At the top of the enclosure, gamma radiation measurements during this 1minute period, showed the following values: • 8.4 mSv / h - in the work platform area from the transfer flask; • 0.41 mSv / h - in the top of an adjacent covered enclosure. It should be mentioned though that, the storage enclosure remains open (with the shielding plug suspended) for maximum 1 minute, which would lead to a maximum annual dose for the same operator (100 baskets / year and 1 minute / basket) of 14 mSv. In order to determine the gamma dose rates due to the effect of "Sky shine" at Cernavodă NPP measurements were made on a height from 0.4 m to 2 m above the working platform and at a distance of 1 m from the edge of a cylinder. They have obtained values of gamma dose rate between 2.1 mSv / h ÷ 4.15 mSv / h at a height of 0.4 m and a maximum of 19.6 mSv / h at a height of 1.5 m. *Individual dose during the construction of a new module* According to records from environmental thermos-luminescent dosimeters, the gamma dose rates outside the storage structure is at the level of natural background radiation. Preventively, while building a new module will be implemented specific radiation protection measures from CNE Cernavoda, to ensure that the individual dose for the staff involved in the construction shall not exceed the dose constraint approved by CNCAN for IDSFS site (50 μSv / year):

	• Maintaining a proper distance from the sources in the vicinity of the working site (by building a temporary fence) • Monitoring the radiation fields in the working area • Reduction of stationary time in the working area • Evacuation of personnel who perform construction works during the transfer of spent fuel from SFB • Installation of additional biological protection shields ***Impact on fauna and flora*** Intermediate Dry Spent Fuel Storage Facility (IDSFS) was put into operation in June 2003, Radioactivity monitoring programs did not detect gaseous and liquid effluent emissions. On the outside wall of the modules, the gamma radioactivity of air is at the natural background level. In normal operating conditions of IDSFS extended site there are no radioactive materials released into the environment in liquid, gaseous or solid phase. Regarding IDSFS, radiation dose to non-human living environment is limited by the fact that no animal lives on the site. The inlets and exhaust of air wherewith is equipped the storage module are covered with a grill to prevent entry of birds and mammals, and through visual inspection of inlets and exhaust of air, shall ensure that insects or insect swarms not obstruct air circulation. If there will be such blockages, there will be temporarily provided materials to stop the entry of this kind of insects. There are 2 closing fences, situated 8 m form each other, which prevent entry of large terrestrial animals in the IDSFS area. In conclusion, in normal operation conditions at the IDSFS extended site, with storage of spent fuel in the new MACSTOR400 modules, the impact on flora and fauna is predicted to be insignificant. ***Impact on soils / subsoil, uses, material assets*** The impact on soil and subsoil produced during use of the deposit is insignificant. Liquid radioactive effluents which could constitute indirect sources of pollution of soil or subsoil are treated and conditioned in the related

	technological systems of the facility. Access roads are concreted and personnel access is limited and subject to the procedures of Cernavodă NPP site. At IDSFS it is provided a drainage system that allows the collection of leaks and is provided their monitoring. If these leaks are radioactive, is provided their treatment at the plant. In these conditions, it cannot be considered rationally contamination of soil and subsoil and therefore, environmental impact of these factors is practically null. ***Impact on quality and quantitative regime of water*** Under normal operation of extended IDSFS there are no pollutant emissions produced to affect surface water and groundwater. The only possible sources are rainwater and water from washing platform. Rainwater from the extended storage site and resulted from washing the platform are collected and discharged into a drain pit. The discharge of these waters to emissary is made through a channel of concrete tubes. Crossings under roads and concrete platforms, channels will be protected in a concrete sleeve. Drainage pit is from reinforced concrete, fitted with a sluice type valves. In case that the platform is washed, sluice valve is closed. From this pit, water samples can be taken to check a possible radioactive contamination. If the water is radioactive, it is loaded into tankers and transported to the plant where it is taken by the radioactive liquid waste system. If the water from washing is not radioactive, it is discharged by gravity to the emissary. Under the concrete platform related to the storage a drainage network is placed, that aims to collect leaking on the platform in case of accidents by destroying the concrete platform, and groundwater, if it accidentally touches the placement quota of the drainage tubes. In normal operation, practically there is no possibility that the seepages from gutters or platforms to reach the underground water. To the adjacent Building is provided an active drainage system linked to the plant system, which would take water resulted from eventual decontamination operations of transfer container, trailer. This water is processed according to plant procedures and facilities provided to it.

	For tracking the groundwater quality, systematic measurements are done in four (4) piezometric wells specially arranged for this work. For extension of IDSFS site with the 4th row of modules, will be made additionally 2 drilled wells, that will ensure the control of quality and water levels in the groundwater from the entire extended IDSFS platform ***Impact on air quality and climate*** Spent fuel bundles, transferred for dry storage, are usually intact because the operating procedures establish that non-intact bundles will be left in the spent fuel bay. After 6 years of cooling, radiological inventory of these bundles is 1000 times smaller than when the bundles were unloaded from the reactor. MACSTOR system uses a dual confining of fuel bundles which ensures three very efficient barriers of retaining of gaseous radionuclides contained in spent fuel: fuel sheath, fuel basket and storage enclosure of storage module. Normal operation of the storage for spent fuel coming from Cernavodă NPP does not involve pollutant air emissions, so there will be no impact on air quality caused by pollutant radioactive emissions. ***Impact of noise and vibrations*** Cernavodă NPP is located in an industrial area, and by ensuring the exclusion areas of Units U1 and U2, dwellings are not permitted at less than 1000 m. For an enterprise located in an industrial area, in accordance with STAS 10009-88, sound pressure levels, equivalent continuous, A-weighted, will be lower than the permitted limit of 65 dB (A). Noise sources within Cernavodă NPP site are located mostly at more than 20 m inward from the site boundary (fence that borders the territory of the plant). The noise levels are at least 3 dB (A) lower than the limit of 65 dB (A) settled by legislation. Project-specific noise sources, on the IDSFS site, are represented by activities of building modules, and during operation by gantry crane operation and spent fuel auto-transporter. In rest of the time, when are not done loading operations on MACSTOR modules or their construction, there is no noise generated on site.

	Noise at workplaces not exceed the level of 90 dB (A) that could produce acoustic exposure levels above accepted norms. Regarding the vibration, considering the quality of special foundations, the submitted vibration levels are estimated to be very low. Given the low levels of vibration during operation and objective remoteness toward inhabited areas, there is not expected environmental pollution vibration. Compared to the current situation, there is not expected an increase of noise and vibration level, given that the activities carried out are similar to those currently, IDSFS expanding and MACSTOR 400 modules carrying out does not require changes in the technological processes currently undertaken on the IDSFS site. ***Impact on landscape and visual environment*** Around the site, the landscape and visual environment are those characteristic to industrial platforms, having dispersion stacks, production halls and headquarters of NPP Cernavodă (offices, workshops and laboratories type ground and first floor), etc. Given the location of the project inside the Cernavodă NPP site, and that the project provides the extension of an existing storage, it is estimated that the project will have no additional impact on landscape and visual environment. ***Impact on historical and cultural patrimony*** Given the location of the project inside the Cernavodă NPP site, the project will not have an impact on the historical and cultural patrimony of the area.
Inputs (e.g. raw material, power sources, etc.)	Given the nature of the project, which involves intermediate storage of spent fuel coming from nuclear units U1 and U2, at the site is not carried out any production process, thus the “raw materials” term is not applicable to IDSFS Extension. The renewable natural resources used are: • river stone, sand, wood - resources used in construction - will be provided by the contractor will not be exploited by the Project site • soil - land on which the building is placed

	• water, air - resources used both in construction and in operation. Electricity is provided from existing networks located on IDSFS platform. For the extension of IDSFS will be foreseen similar solutions to ensure the electricity supply. Regarding fuels, similar to the stage previous of IDSFS extension, will be used Diesel fuel for the following activities: • transport spent fuel basket to the modules on IDSFS site by auto-transporter • realization of the construction works of the MACSTOR modules - machinery and transport means involved in the building process of modules • Diesel group functioning in the event of any interruption in power supply Diesel fuel will be provided by suppliers approved by NPP / filling stations.
Outputs (e.g. amounts and types of: discharges in air, discharges into the water system, solid waste)	In normal operating conditions of IDSFS extended site there are no radioactive materials released into the environment in liquid, gaseous or solid phase. Under normal operation of extended IDSFS there are no pollutant emissions produced to affect surface water and groundwater. The only possible sources of polluting the environmental factor water is the rainwater and the water from platform washing. Normal operation of the storage for spent fuel coming from Cernavodă NPP does not involve pollutant air emissions. MACSTOR system uses a dual confining of fuel bundles which ensures three very efficient barriers of retaining of gaseous radionuclides contained in spent fuel: fuel sheath, fuel basket and storage enclosure of storage module. As a result of operation at IDSFS, regarding radioactive wastes, we can make the following clarifications: • **Liquid radioactive waste** - at IDSFS can be generated potentially radioactive liquid wastes (coming from the decontamination by the wash of the transfer container, trailer) that are managed within the power plant's systems. • **Gaseous radioactive waste** - Radioactive exhausts may only occur in the case of events such as: a) breaking of a sheath of a fuel element

	If the defective fuel item is already stored in the module, the presence of confinement barriers (basket and storage enclosure) prevents a possible release of radioactive products. b) releases from the basket The basket is welded and tightness is assured; so far, there were not detected releases from the basket at operational CANDU objectives. However, containment is provided by the other barrier (storage cylinder). Consequently, the likelihood of gaseous releases is very low, the storage unit being assured towards the environment through these engineering barriers: - storage basket; - storage cylinder. • **Solid radioactive waste** - During storage, for the annual monitoring of storage cylinder is used a filter for retaining particles and one with active charcoal to retain iodine, for each storage cylinder. These filters, which are only a few cm^3 of waste / enclosure / year, will not normally be contaminated. Considering the source of sampling, they are considered weak-active waste and are treated in accordance with NPP procedures. Also in the category of solid weak-active waste goes also materials used in case of an eventual decontamination of the transfer flask or storage module.
Transboundary impacts (e.g. types, locations, magnitudes)	The distances from the extended IDSFS on the Cernavodă NPP site - to borders are: • Over 36 km from Bulgaria – the distance is measured in a straight line from the site boundary to the nearest border point • Over 110 km from Ukraine – the distance is measured in a straight line from the site boundary to the nearest border point • Over 127 km to the Republic of Moldova – the distance is measured in a straight line from the site boundary to the nearest border points Regarding the IDSFS expansion, MACSTOR modules (both MACSTOR 200 and MACSTOR 400) are themselves buildings designed to hold in safe conditions, radiation from the spent fuel, the storage representing a measure of proper waste management generated by nuclear systems. Storage area is located at a sufficient

	distance inside the exclusion zone of the Cernavodă site, ensuring the maintenance of dose for the population below the limit for both normal operation and for accident conditions. Storage area is equipped with an adequate fencing to prevent unauthorized access of public in the facility. Given the long distance of over 36 km from the border, from the storage area to the border in normal operating conditions, there is no danger of a transboundary impact. Because there are no contaminated air emissions during IDSFS operation, we conclude that there is no impact on the environment that can be analysed / calculated for transboundary impacts.

Proposed mitigation measures
(e.g. if known, mitigation measures to prevent, mitigate, minimize, compensate for environmental effects)
	Environment factor water
	Avoidance and reduction measures of the impact on the environment factor water are:
	• constructive nature (design / technical solutions applied) and is aimed at sealing surfaces and adequate water collecting on the IDSFS and MACSTOR module surface, namely:
	  • on the IDSFS site roads and platforms are concreted
	  • roads and platforms inside IDSFS are designed so that through considered slopes, water from rain to be properly evacuated to ditches and sewers related to IDSFS platform.
	  • the remaining land of the IDSFS site – green spaces, is arranged so as to solve drainage from rainfall, with drainage slopes toward adjacent roads.
	  • MACSTOR modules are perimetral serviced with ditches (1 ditch to 1 and 2 module group; 1 ditch to 3 and 4 module group; and 1 ditch to 5, 6 and 7 module group) as well as by ditches between modules, all covered with metal carriageway grills, ditches that connect to water collection pit and pit valves, placed between modules. Similarly, following the expansion of the IDSFS site, MACSTOR modules will be served perimeter and between modules, by covered metal carriageway grills that will connect to water collection pit and pit valves
	  • to prevent the penetration of rainwater through the visiting opening in the pit of

	valves, starting from module 2 was provided bordering of the opening with an angular. • upon completion of each odd module, until commissioning of the even pair module, the perimeter ditch is partially made, and is closed by the corresponding section of the unexecuted even module. • the collector pit along with the ditch are able to collect and confine the maximum volume of water, resulted in 24 hours of rain, with return period of 5 years, from the platform related to both modules between which are placed. This protection measure provides a sufficient time for verification of water thus retained and discharge accordingly without allowing possibly contaminated water spreading. • in the collector pit was installed a level indicator, and the alarm of the maximum level of water from the pit (from rainwater and water from washing platform) is transmitted in the Main Control Room (MCR); totally, by IDSFS extension, will be necessary a number of 22 signalling devices • to prevent seepage from ditches and pit of collected water possibly radioactively contaminated, they are protected waterproof. • for quality control and water levels in groundwater on the IDSFS relevant platform, four (4) drilled wells (piezometric wells - P1, P2, P3, P4) were placed. • once the building of the 4th row of modules starts, will be made additionally 2 drilled wells, that will ensure the control of quality and water levels in the groundwater from the entire extended IDSFS. • measures applied during the technological process of storing of the irradiated spent fuel: • during a storage campaign of irradiated fuel, the valve from the valve pit for the module being loaded is in closed position, in order to retain water from rainfall from related platform. • from the collecting pit water samples are taken to check possible radioactive contamination. • water is released only after through laboratory analysis is confirmed that the water is not radioactively contaminated with

	artificial radionuclides, according to the procedure SI-01365-RP06. • if the water collected, resulting in rainfall from the platform is radioactively contaminated, it is loaded into trucks and transported to the NPP, where is taken by the Liquid Radioactive Waste System. • if this water is not radioactive contaminated, the valves from the valve pit opens, and the water collected is gravitational discharged in the sewage collector from rainfall from IDSFS platform. • between storage campaigns, the valve is put in the open position, only after confirming the lack of contamination of the platform. ***Environment factor air*** Normal operation of the storage for spent fuel coming from Cernavodă NPP assumes no emissions into the air, so do not require special measures to reduce the impact on the environmental factor air due to pollutant emissions. Regarding radiation, MACSTOR system uses a dual confining of fuel bundles which ensures three very efficient barriers of retaining of gaseous radionuclides contained in spent fuel: fuel sheath, fuel basket and storage enclosure of storage module. Also IDSFS is equipped with a sampling system, in order to monitor fuel state by sampling air within the storage enclosure and filters analysis in the laboratory. This monitoring is done one week after filling the enclosure and then biannually. ***Environment factor soil / subsoil*** Mitigation measures on soil / subsoil are also constructive nature, namely protect soil and subsoil of the site area by building concrete platforms, module design solutions of MACSTOR modules, and measures relating to operation: • create confinement barriers of radioactive materials (basket and storage enclosure) • barriers protect against degradation • monitoring containment barriers • prevention of barriers damage • collection and controlled disposal of waters Also, protection measures of environmental factor water, and proper waste management measures and hazardous substances, ensures

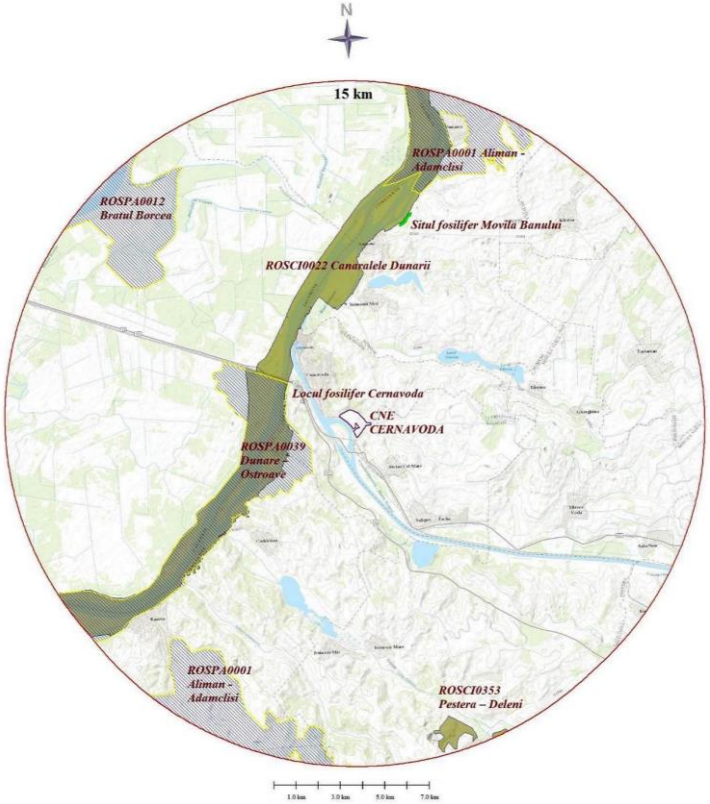
	the protection of the environmental factor soil / subsoil. ***Environment factor fauna and flora*** According to *Preliminary study of impact for intermediate dry spent fuel storage facility- IDSFS* conducted by ICIM Bucharest in 2001, during the execution of IDSFS objective, environmental impact is reduced and time limited. His diminution is possible with a judicious site organization, especially in terms of fuel supply of equipment and vehicles, proper waste management, maintenance in good working condition of machinery and equipment, use of advanced equipment in terms of pollutant generation and noise, etc. Compliance project in terms of technical execution solutions, of quality materials, and proper equip of the objective in order to avoid the risk of adverse environmental effects. During operation the main measures that can be taken to minimize the impact of storage modules on the environment are: • structural integrity of the storage modules • biological protection • implement a high quality confining system • sufficiently large distance from the storage place towards the limit of the exclusion area. ***Environment factor population (social and economic environment), human health*** IDSFS extension is a measure of appropriate management of waste generated by nuclear systems - radioactive spent fuel. Radiation protection of operational staff and population are provided for IDSFS extension in accordance with principles and general requirements applicable to all nuclear installations. Storage area is located at a sufficient distance inside the exclusion zone of the Cernavodă site, ensuring the maintenance of dose for the population below the limit value for both normal operation and for accident conditions. Storage area is equipped with an adequate fencing to prevent unauthorized access of the public in the plant. Since design stage, IDSFS is designed so that radiation exposure should be kept as low as reasonably achievable (respecting the ALARA principle). Thus are reviewed the following protection measures against radiation from IDSFS:

	• radiation shielding (gamma and neutrons) to reduce exposure of personnel during normal operation of IDSFS • organization of circulation paths and control the access in the area • fuel containment • minimizing the need for remediation through the use of appropriate materials and systems • radiation monitoring. Shielding against gamma radiation and neutrons of the operating personnel is achieved through constructive and operating measures, namely: • design the walls and floor of the storage modules (both MACSTOR 200 and MACSTOR 400) as well as the final shield plug, so as to reduce the radiation dose rate to acceptable limits; • providing a labyrinth of concrete to the storage modules (both MACSTOR 200 and MACSTOR 400) so as to prevent primary or secondary irradiation outside it. Labyrinth ensure nominal thickness of monolithic concrete wall in any direction • providing a protective ring of plumb (both MACSTOR 200 and MACSTOR 400) to ensure operator shielding located on the module during module loading operations • ensuring a minimum distance between operator and storage enclosure under filling, during which it is discovered • filling technology as a whole During module charging, in order to prevent the spread of potential contamination, they were provided a series of measures: • execution of the spent fuel transfer to IDSFS only during the day and in good weather conditions; • verification, after each load, of the contact area between the transfer flask and the storage cylinder; • decontamination according to plant procedures; • isolation of the drainage systems from the storage platform. Fuel containment is ensured by technological barriers (welded storage basket and module storage enclosure) that are designed to isolate the radioactive material to the environment. In cases of accidental contamination, will apply, as appropriate, plant procedures for "rubber

	area" or "rubber change area". Operating personnel access to IDSFS is controlled, made through Security Building, ensuring access limiting to the IDSFS site. Access on the MACSTOR modules is made on an access ladder located on the small side modules, not to interfere with inlet / outlet of the cooling air. ***Measures to avoid, reduce or improve the impact on landscape*** No measures are required to avoid, reduce or improve impact on landscape because the project is placed in the enclosure of Cernavodă NPP, where the overall landscape is industrial, on the site being present dispersion baskets, production halls and head offices of the Cernavodă NPP (offices, workshops and laboratories type ground and first floor), etc. ***Measures to avoid, reduce or improve the impact on historical and cultural patrimony*** No measures are required to avoid, reduce or improve the impact on the historical and cultural patrimony, because the project is located inside the Cernavodă NPP. Moreover, around each nuclear unit are set: • an exclusion area with a 1 km radius – in which no other activities than those carried out in the NPP are allowed, • a low population area - with a radius starting from 1 up to 2 km from the nuclear objective thus considering existing restrictions, the new integrated project may not have an impact on the historical and cultural patrimony, in terms of operation at the designed parameters. ***Measures to reduce noises and vibrations*** If during operation phase, it is found local situations of exceeding noise and vibration levels, as a result of specific investigations, will act through specific reducing measures: • reduce noise levels and vibration sources • noise screenings • anti-vibration treatments • receiver decreases of noise and vibration levels by using personal protective equipment by workers. ***Measures to reduce impact due to waste generated during operation*** Measures that should be considered to

	reduce impacts associated with waste production, generated during operation are: • Implementation of the existing and already operational system in Cernavodă NPP in the treatment, classification and tracking of waste and optimizing processes procedures, potential waste generator. • Non-radioactive industrial and household waste management according to approved procedures in Cernavodă NPP, of the Environmental permit and legislation in force. • Continuous monitoring of waste management and their managing. Regarding weak radioactive waste management from IDSFS operation, we can make the following clarifications: • Radioactive liquid waste – at IDSFS can be generated potentially radioactive liquid wastes that are managed within the power plant's systems • Radioactive gaseous waste – in case of occurrence of radioactive exhausts, only in the case of events such as: a) breaking of a sheath of a fuel element - the presence of confinement barriers (basket and storage enclosure) prevents a possible release of radioactive products, if the defective fuel item is already stored in the module. b) releases from the basket – the tightness is assured constructively by welding, and containment is provided by the other barrier (storage cylinder). Consequently, the likelihood of gaseous recesses is very low, the storage unit being assured towards the environment through these engineering barriers: - storage basket; - storage cylinder. • Radioactive solid waste – radioactive solid waste resulting from the process of preparing the transfer container for his location on the auto – transporter, and after an eventual decontamination of the transfer container or of the storage module, are collected in a type A container. For transportation of the waste container back to Unit 1 or Unit 2, will comply with the specific procedure. Treating this waste is identical to other weak active solid waste treatment resulting from operation of the plant.

Additional information/comments	The assessed objective is placed on the Cernavodă NPP platform, outside of protected natural areas of national and community interest. Project is located in the vicinity of Natura 2000 sites, natural monuments, nature reservations and localities. On a radius of 15 km from the NPP, we can find these next protected natural areas of national and community interest: • ROSPA0039 Dunare - Ostroave (approx.1,8 km up to NPP) • ROSCI0022 Canaralele Dunarii (approx. 2,2 km up to NPP) • Locul fosilifer Cernavodă (approx. 2,6 km up to NPP) • Situl Fosilifer Movila Banului (approx. 8,6 km up to NPP) • ROSPA0012 Bratul Borcea (approx. 10,06 km up to NPP) • ROSPA0002 Allah Bair - Capidava (approx. 10,3 km up to NPP) • ROSPA0001 Aliman - Adamclisi (approx. 11,5 km up to NPP) • ROSCI0353 Pestera - Deleni (approx. 13,4 km up to NPP) Thus, near Cernavodă NPP, on a 15 km radius, there are • 6 protected natural areas of community interest among which 2 sites of Community importance, • 4 special protection areas for avifauna and • 2 protected areas of national interest (2 nature monuments).

	 Cernavodă NPP platform location towards protected natural areas of national and community interest
(iv) Proponent/developer:	
Name, address, telephone and fax numbers	**Societatea Naţională Nuclearelectrica (Nuclearelectrica National Company) S.A.**: • Bucharest, Sector 1, Polona Street no. 65 • Tel: +4021.203.8200 • Fax: +4021.316.9400 • Web Page: www.nuclearelectrica.ro • E-mail: office@nuclearelectrica.ro **Cernavodă NPP Branch**: • Constanţa County, Cernavodă city, Megidiei street no.2 • Tel: +40241.801.001 • Fax: +40241.239.266 • Web Page: www.cne.ro • E-mail: mciorciog@cne.ro
(v) EIA documentation	
Is the EIA documentation (e.g. EIA report or EIS) included in the notification?	To this notification is attached the documentation relating to the transboundary impact assessment drawn up in accordance with the requirements of annex 2 of the Convention from Espoo. In this documentation are described the purpose of the activity, the main objectives, the impact of environmental factors, including transboundary,

	proposed measures to reduce/eliminate impact on each environmental factor possibly affected.
If no/partially, description of additional documentation to be forwarded and (approximate) date(s) when documentation will be available	Technical report is added. The EIA report should be available in a few months.
Additional information/comments	No
2. POINTS OF CONTACT	
(i)Point of contact for the possible affected Part or Parties:	
Authority responsible for coordinating activities relating to the EIA (refer to decision I/3,appendix): Name, address, tel. and fax numbers	Ministry of Environment and Water, Bulgaria 22nd Maria Louiza Blvd. Sofia, 1000 Telephone: +359 02 940 61 94 Fax: +359 02 986 25 33 e-mail: minister@moew.government.bg
List of affected parties to which notification is being sent	Bulgaria
(ii) Points of contact for the Party of origin	
Authority responsible for coordinating activities relating to the EIA (refer to Decision I/3, appendix) Name, address, tel. and fax numbers	Ministry of Environment , Romania 12th, Libertatii Blvd., Sector 5, Bucharest, 040129 Telephone: 004 021 408 9523 Fax: 004 021 316 0421 e-mail: cabinet.ministru@mmediu.ro
Decision making authority if different than authority responsible for coordination activities relating to the EIA Name, address, tel. and fax numbers	-
3. INFORMATION ON THE EIA PROCESS IN THE COUNTRY WHERE THE PROPOSED ACTIVITY IS LOCATED	
(i) Information on the EIA process that will be applied to the proposed activity	
Time schedule:	10 months
Opportunities for the affected party/parties to be involved in the EIA process	The Bulgarian party may participate in decision-making under the EIA procedure as follows: - Following the notification and submission of the enclosed documentation, may take the decision to participate in the EIA procedure am may send comments and observations that will be taken into consideration in the EIA documentation; - If necessary, the authorities of the affected party will be consulted subsequently, according to the

	provisions of art. 5 of the Espoo Convention.
Opportunities for the affected party/parties to review and comment on the notification and the EIA documentation	Comments on the notification and technical report are expected, if Bulgaria decides to participate to the EIA procedure.
Nature and timing of the possible decision:	The decision that might be taken is to issue the environmental agreement and the construction authorization for this project
Process for approval of the proposed activity	The proposed activity will be approved by the construction authorization after the environmental agreement (final EIA decision) is issued by the environmental competent authorities.
Additional information/comments	-
4. INFORMATION ON THE PUBLIC PARTICIPATION PROCESS IN THE COUNTRY OF ORIGIN	
Public participation procedures	In accordance with the provisions of Romanian legislation, the public participates in decision making during EIA procedure, as follows: -has a minimum of 30 days for submitting comments/observations to the EIA documentation in the procedural stages; - within the public debate organized after the submission of the EIA report; the public has access to EIA documentation and may formulate comments/observations to it both before and during the public debate.
Expected start and duration of public consultation	In accordance with Romanian legislation, the public has a minimum of 60 days for submitting comments/observations to the EIA documentation in the procedural stages
Additional information/comments	Contact persons from Ministry of Environment - General Directorate for Impact Assessment and Pollution Control Mihaela MĂCELARU, focal point on Espoo Convention e-mail: mihaela.macelaru@mmediu.ro Anca – Maria APREUTESEI , senior adviser e-mail: anca.apreutesei@mmediu.ro tel.: 004 021 408 9588 fax: 004 021 316 0421
5. DEADLINE FOR RESPONSE	
Date	30 days after receiving the notification