NOTIFICATION

TO AN AFFECTED PARTY OF A PROPOSED ACTIVITY UNDER ARTICLE 3 OF THE CONVENTION ON ENVIRONMENTAL IMPACT ASSESSMENT IN A TRANSBOUNDARY CONTEXT

ABOUT

FACILITY FOR TREATMENT AND CONDITIONING OF SOLID RADIOACTIVE WASTES WITH A HIGH VOLUME REDUCTION FACTOR AT KOZLODUY NPP

1. INFORMATION ON THE PROPOSED ACTIVITY	
(i) Information on the nature of the proposed activity	
Type of activity proposed	Improved volumetric size reduction technology for treatment of the waste currently in storage and for the wastes to be generated during the decommissioning activities on units 1 to 4 of Nuclear Power Plant "Kozloduy" (KNPP).
Is the proposed activity listed in Appendix I to the Convention?	Yes. Included in item 3 of Attachment 1. (Installations for processing of radioactive waste).
Scope of proposed activity (e.g. main activity and any/all peripheral activities requiring assessment)	Radioactive waste (RAW) is stored in a number of locations throughout the KNPP site. Some of these locations include buildings which will become part of the Safe Enclosure (SE) area within the site where surveillance and maintenance will be minimized during the SE period. To reduce the surveillance and maintenance in these locations, it is proposed that the waste to be removed and processed. The current disposal process for RAW generated on site is to reduce it in volume using existing volumetric reduction techniques (compaction) and to grout it inside standard cuboids concrete containers. These containers are stored temporarily onsite pending the commissioning of a long term off-site disposal facility. This improved volumetric size reduction techniques will be installed at KNPP for treatment of the waste currently in storage and for the wastes to be generated which will allow foreseeable RAW to be stored in existing onsite facilities for an extended period, pending the commissioning of a permanent disposal facility.
Scale of proposed activity (e.g. size, production capacity, etc.)	The primary objective of this facility is to enable the volumetric size reduction of low and intermediate level radioactive waste currently stored in various locations on the KNPP site. The Volume Reduction Factor expected for each type of waste of KNPP that is going to be treated in the Plasma Melting Facility (PMF) is the following: • Untreated waste ≥ 50 • Pre-compacted waste ≥ 10 • Super-compacted waste ≥ 2

	The Primary Treatment Chamber where the plasma torch will be installed will be designed with maximum treating capacity of 80 kg/h and nominal treating capacity of 65 kg/h of shredded organic waste during **100 hours weekly** starting from Monday morning until Saturday morning. (The expected amount of treated RAW is about 250 tons annually which is about 10 times less than the standard incinerating installation capacity for treatment of hazardous wastes.) The chamber is a high temperature (1100°C – 1500°C) tipping furnace. The volume of the furnace is designed to contain around **200 l** of molten slag.
Description of proposed activity (e.g. technology used)	Plasma System is a high energy technology able to treat a range wastes. In plasma technology a thermal plasma field is created by directing an electric current through a low pressure gas stream. Radioactive waste is thermally decomposed or melted at high temperatures by a high-output plasma burner. This metallurgy-derived plasma process on the one hand allows combustible materials to be processed, but on the other hand, also permits the fusion of metallic components, concrete etc. The same process steps can be used to vitrify both organic and inorganic materials into residual materials suitable for storage in final repositories. The untreated, pre-compacted and super compacted waste will undergo a thermal process based on plasma technology. The waste is transferred to a shredder and from a continuous feeder to the primary treatment chamber. Into the primary treatment chamber equipped with a plasma torch and acting as a heat source, the organic material is vaporised in volatile hydrocarbons, carbon monoxide, etc while non-combustible and other inorganic constituents are melted and transformed into glassy slag. The unburned hydrocarbons, soot particles, CO etc, flow from the primary treatment chamber to the secondary treatment chamber in order to obtain a complete combustion of primary oxidised components such as CO_2, H_2O, SO_2. After the secondary treatment chamber the flue gasses enter into the flue gas treatment system. The flue gasses are first cooled down in a boiler with closed cooling circuit, before they enter into the bag filter house. Into the bag filter compartment, the fly ashes are removed. As a back-up for the bag filters and as an extra filtration step, the gasses entering in the HEPA filter component. For removing eventual gaseous pollutants, such as SO_2, and HCl to acceptable values, the gasses are washed into a scrubber unit. After heating up NO_x concentration is reduced catalytically into the DENOX-system. Finally the flue gasses are evacuated to the Auxiliary Building -2 (AB-2) ventilation system. The Slag Collection chamber is beneath the primary treatment chamber and holds the slag moulds until they are filled and conveyed to the cooling chamber. The hot slag is poured into a 5 mm thick steel mould which is placed into an iron cooling mould of at least 100 mm thickness in order to absorb the heat and permit its cooling. After cooling down the cooling mould moves to the emptying position where the inner mould is taken by a small bridge and transferred into a 200 l drum. Internal transport into building AB-2 of the 200 l drums is carried out by hand pallet trucks.

Description of purpose of proposed activity	The forthcoming Decommissioning of KNPP units 1-4 include all administrative and technical measures that are taken to remove all ionizing radiation sources from the nuclear facility site which are subject to regulatory control according to the Safe Use of Nuclear Energy Act. These measures include decontamination and dismantling. Projections show that with the retrieval of RAW and the generation of fresh RAW, the storage facility for the grouted containers with the conditioned radioactive waste is not going to have sufficient capacity to hold all the waste to be retrieved over the foreseeable future before an off-site facility becomes available. As a consequence, improved volumetric size reduction techniques are to be installed at KNPP for the waste currently in storage and for the wastes to be generated which will allow foreseeable RAW to be stored in existing onsite facilities for an extended period, pending the commissioning of a permanent disposal facility. Solid low active waste will be treated in a Plasma Melting Facility with a high volume reduction factor. The treated wastes will be included in a cement matrix and provided for safe storage to the State Enterprise “Radioactive Wastes”.
Rationale for proposed activity (e.g. socio-economic, physical geographic basis)	The rational for the selection of the Plasma melting technology is that the following will be achieved: • It is a high energy technology able to treat a large range of wastes; • Assurance of highest coefficients of volume reduction factor higher than 50 for untreated waste, higher than 10 for pre-compacted waste and higher than 2 for average super compacted waste is guaranteed • A robust waste form, similar as the vitrification process, is obtained free from any organic material and suitable for long term storage and disposal; • There is no need for pre-treatment or manual sorting out of the waste.
Additional information/comments	
(ii) Information on the spatial and temporal boundaries of the proposed activity	
Location+	The site of the PMF is inside the KNPP site where the decommissioning activities of Units 1 to 4 are planned. It is situated in the north-west part of the Republic of Bulgaria, on the South bank of the Danube River, at 3.5 km to the South-East of the town of Kozloduy.
Description of the location (e.g. physical-geographic, socio-economic characteristics)	The facility will be installed inside the perimeter of KNPP site fence that is located at Bulgarian part of the Danube River basin. The proposed location is within the AB-2.The bay identified as the location for the installation of the PMF Facility is Room BK301, elevation +6.30. The site is located at the 694th kilometre along the Danube River and is located at 3.7 km to the South of the river bed and on the state boundary with the Republic of Romania. The region of the site is located in the northern part of The Kozloduy site is situated on a plain, with an average altitude varying from +28.00 m to +36.00 m according to the Baltic altitude system. The lowland and the site are protected from the Danube River by means of a dyke which reaches an

	absolute elevation of +30.40 m. Within 30km around the KNPP site the are located: - Numerous settlements amongst which the following administrative centres of the municipalities on the territory Bulgaria: Kozloduy, Vulchedrum, Hajredin, Mizia, Lom, Biala Slatina, Oriahovo. - About 23 comunities on the territory of Romania – (Bechet, Nedeia, Gighera, Zăval, Ostroveni, Sărata, Călăraşi, Dăbuleni, Lişteava, Piscu Sadovei, Sadova, Gângiova, Mâcedu de Jos, Măcedu de Sus, Săpata, Plosca, Bistret, Brânduşa, Goicea, Bârca, Horezu Poenari, Toceni, Valea Stanciului
Rationale for location of proposed activity (e.g. socio-economic, physical-geographic basis)	The location of the volume reduction activities will be restricted in the site of KNPP Units 1 to 4 in order to avoid transportation of the incoming RAW outside of the nuclear site.
Time-frame for proposed activity (e.g. start and duration of construction and operation)	Construction is planed to start in January and to finish in August 2013. It could be initiated only after approval of the project Technical Design by the respective institutions, and obtaining positive Decision on the Environmental Impact Assessment (EIA). The PMF entering in operation is scheduled for the end of 2014.
Maps and other pictorial documents connected with the information on the proposed activity	Attachment 1 of this document presents the maps showing units 1 to 4 site location and its position to the Romanian/Bulgarian border.
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.)	An Environment Impact Assessment Report for the realization of the Plasma melting Facility shall be performed according to a Decision of the Bulgarian Ministry of Environment and Water made after preliminary appraisal based on the requirements of the Bulgarian legislation in force (Environmental Protection Act, Regulation for the terms and the conditions for the EIA) and the provided information about the project. The EIA-R shall be developed by an Independent Team of skilled Environmental Experts. The EIA-R will fulfil: - The Guidelines of Bulgarian Ministry of Environment and Waters. - The European Bank for Reconstruction and Development (EBRD) policies and the EC Directive (Directive EC 85/337/EEC, amended by 97/11/EC-EC EIA Directives, which are adopted into the Bulgarian legislation). The EIA-R will describe, analyze and assess the potential effects and the possible significant impacts to the people and environment, including cumulative impacts, evaluation of alternatives, sustainable development

	issues, impact of peripheral activities, etc. The EIA will analyze the impacts on the people and environment during stages 1 and 2 of the decommissioning. A consideration of site emergencies and accidents will also be provided.
Expected environmental impacts of proposed activity (e.g. types, locations, magnitudes)	The Environmental Impact Assessment Report will analyze all possible environmental impacts of the proposed activity and present the results in a table form. According to the design requirements: • There will not be any uncontrolled releases of gaseous, liquid or solid radioactively contaminated materials during all modes of operation, events and in case of design basis accidents of the Facility. • Any kinds of toxic, non toxic and foul-smelling gaseous leaks are not permitted during PMF operation. • A permanent monitoring of the main chemical pollutants, such as SO_2, HCl, CO, NO_x etc., is foreseen. • Shall be demonstrated that Best Available Technology (BAT) is applied. • The maximal chemical releases shall comply with the effective regulatory documents and with the current discharge permits issued to Kozloduy NPP. Also, PMF releases shall result in no increases of the total values permitted to Kozloduy NPP. • Considering possible emergencies, no non-radioactive discharges will be allowed. The new Facility is foreseen to comply with all the requirements of the Bulgarian and the European legislation for performing such kind of activities, considering the respective regulatory documents. Therefore, in case of an eventual occurrence of potential impacts on the personnel, the population and the environment, they will be within the admissible limits.
Inputs (e.g. raw material, power sources, etc.)	**Construction works:** Water is the only consumption of natural resources foreseen during the implementation of the project. **Operation:** The required supply of resources is estimated as follows: • Water resources: o Cooling water: 114.6 m^3/h for cooling heat exchangers; the water flow of these loops is taken and returned from and to KNPP cooling water system; the respective annual consumption of cooling water will be 458 400 m^3/a; o Processing water: maximum service water consumption will not exceed 1 m^3/h, the nominal value is 0.625 m^3/h with expected annual value 2500 m^3/a • Nitrogen -120 m^3/h; • Ammonia – max consumption is 14 kg/h with expected annual consumption 28 000 kg/a (with annual average 7 kg/h) • Electrical power - 1.6 MW; • Diesel fuel - 1200 l /week, 48000 l/a.
Outputs (e.g. amounts and types of:	Impacts from non-radiation aspects are not expected on the health of the

emissions into the atmosphere, discharges into the water system, solid waste)	population during operation. The PMF will be so designed and constructed, that during normal operation or in case of a Design Basis Accident, there will be no uncontrolled releases of gaseous, liquid or solid contaminated materials into the environment, as the PMF will be an “isolated system”. The equipment that will be used to receive and empty containers in the PMF will not allow for any uncontrolled releases of radioactive materials into the working environment. All liquid and gaseous releases will be treated in appropriate ways by PMF systems, prior to entering the existing KNPP ventilation and water treatment systems. The maximum gases released from the process is evaluated on the amount of 1 400 cubic meters annually. The gaseous and the aerosol releases shall meet the relevant Bulgarian regulations and EC Directive 2000/76/EEC and will be subjected to monitoring and control. For the continuous measurement and analysis of the exhaust gasses, a top-quality and high reliability commercial off-the-shelf component was selected: world leader Asea Brown Boveri (ABB) Advanced Cemas FTIR (ACF-NT), multi-component analysis system for emission and process monitoring. Suited for the most rugged environments, ABB FTIR spectrometers offer a measurement technology with the highest levels of accuracy, selectivity and reliability. Secondary Solid Radioactive Wastes (resulting from PMF maintenance, personnel protective clothing, filters etc.) are expected to be generated in minimal quantities. The secondary waste will be treated within the PMF. The operation of the gas purification equipment may generate some liquid radioactive waste. However, the quantity of these effluents and the level of their radioactive contamination will be kept to a minimum and will be about 1000 times less in comparison to those generated during operation of units 1 to 4. Not more than 0.1 cubic meters per hour of these liquid radioactive wastes will be allowed to be discharged to the drain water collecting system at AB-2. The liquid radioactive waste will be treated by PMF special equipment and then will be further connected to the existing AB-2 system for liquid radioactive waste management. They will also have to meet the acceptance criteria of this system. The greatest amount of radioactivity stays into the slag or ash, while the remaining activity together with the fly ash, into the flue gasses, is almost totally captured into the bag filters. Depending on the characteristics of the isotopes a minor part of the activity is absorbed into the scrubber water. This means that the radioactivity released into the atmosphere is negligible. Based on the operation of similar facilities in Belgium and Switzerland, chemical releases are lower than those stipulated in EC Directives. Considering the annually limitations for discharges in the atmosphere from unit 1 and 4, the activity expected to be emitted is, in terms of percentage, a 4.3E-03% compared with the admissible level.
Transboundary impacts (e.g. types, locations, magnitudes)	During normal operation and during Design basis accident, no transboundary effects will occur. Even the Beyond Design Basis Accidents impacts would be very low, due to the fact that only low and interim radioactive wastes will be

	treated in the facility.
Proposed mitigation measures (e.g. if known, mitigation measures to prevent, eliminate, minimize, compensate for environmental effects)	The planned activities include technical and administrative measures to maintain the risk of operation in accordance with Bulgarian Nuclear Regulatory Agency requirements and the nationally and internationally accepted radiological dose limits and constrains. (IAEA Basis Safety Standards, EU Directive 96/29/Euratom of 13.05.1996 “Laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation” and the harmonized Bulgarian legislation: Regulation on Basic Norms of Radiation Protection, Regulation on Safe Management of Radioactive Waste, Regulation on radiation Protection Du ring Activities with Sources of Ionising Radiation, etc). The following technical and organizational requirements to the project will have functions as preventive and mitigation measures in aspect of environmental protection: • The equipment of the PMF will be able to ensure the management of the generated gases, ashes, soot and power particulates (they will pass through filtration and treatment facilities and the ventilation stack), and is aiming at preventing the spread of radioactive and or/chemical contamination. • The implementation of the design requirements will be verified by tests to prove PMF capability to treat simulated waste in a satisfactory way so that to meet the physical characteristics of RAW expected for treatment. They will be so planned as to demonstrate the functionality of the system when using real materials for RAW simulation. These results will be presented for issuing the respective acts for permitting the use of the facility and the further commissioning. • A PMF design requirement is that the selected technology should have been successfully utilised at another place or under similar conditions. This will reduce the risk of unforeseeable complications during PMF design and operation. • Possible environmental impacts shall be taken into account, such as earthquakes, vibrations, temperature, pressure, strong wind, electromagnetic distortions, aging, exposure to atmospheric impacts, moisture and possible combinations of such factors during all the operational states and design basis accidents. • The recommended measures from EIA-R will be implemented in the design of the facilities involved in the process, including environmental management system, monitoring programs, emergency planning and preparedness. • PMF will allow for internal and external decontamination (from radioactive and chemical depositions) prior to the start the maintenance operations and later - the decommissioning. The structure will allow flushing of the harmful gases, contained inside the system, before to the technical maintenance. • The PMF will be designed such that any leakage of any solid or liquids from the process will be contained and allowed to be recovered or drained to an area (within the PMF) , intended for the collection of such liquids. • PMF construction will allow that in case of malfunctions or emergencies,

	the process materials can be retrieved from it without any disassembly being required. • The PMF Equipment will be capable of safe shut-down using emergency stop systems during normal and abnormal operation with the system being placed into a safe operational state.
Additional information/comments	Best available techniques are applied. An example is the abatement for dust. The EC Directive 2000/76/EC allows a maximum dust content of 10 mg/Nm³. But due to the use of the Best Available Technique the dust content for the proposed flue gas cleaning system is lower than 1 mg/Nm³.
(iv) Proponent/developer	
Name, address, telephone and fax numbers	Kozloduy NPP, Plc Bulgaria, 3321 Kozloduy, Phone: +359 973 7 2020, Fax: +359 973 8 05 91
(v) EIA documentation	
Is the EIA documentation (e.g. EIA report or EIS) included in the notification?	No
If no/partial, description of additional documentation to be forwarded and (approximate) date(s) when documentation will be available	Additional information will be sent on request after receiving responses to the present notification and upon positive answer on behalf of the Romanian country and declaration of who will participate in the procedure.
Additional information/ comments	No
2. POINTS OF CONTACT	
(i) Points of contact for the possible affected Party or Parties	
Authority responsible for coordinating activities relating to the EIA (refer to decision I/3, appendix) - Name, address, telephone and fax numbers	Ms. Dorina MOCANU Director Directorate for Pollution Control and Impact Assessment Ministry of Environment and Forests 12, Blvd. Libertatii, Sector 5, Bucharest RO - 040129 Telephone: +40 21 316.77.35 Fax: +40 21 316.04.21 E-mail: dorina.mocanu @mmediu.ro
List of affected Parties to which notification is being sent	No
(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, telephone and fax numbers	Ministry of Environment and Water 22 Maria Louisa Blvd. 1000 Sofia Telephone: +359 2 988 25 77 Fax: +359 2 986 25 33 Ms. Jacquelina METODIEVA Head of EIA/EAD Department Telephone: +359 2 940 60 32 E-mail: metodieva @moew.government.bg
Decision-making authority if different than authority responsible for coordinating activities relating to the EIA - Name, address, telephone 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	Based on the requirements of the Bulgarian legislation and EBRD requirements.
Opportunities for the affected Party or Parties to be involved in the EIA process	Yes
Opportunities for the affected Party or Parties to review and comment on the notification and the EIA documentation	Yes
Nature and timing of the possible decision	45 days after the last meeting for Public disclosure.
Process for approval of the proposed activity	In accordance to the Environmental Protection Act (SG No.91/2002) and Regulation for the terms and conditions for the EIA (SG No.25/2003). Last revision available on Internet page: www.moew.government.bg
Additional information/comments	None
4. INFORMATION ON THE PUBLIC PARTICIPATION PROCESS IN THE COUNTRY OF ORIGIN	
Public participation procedures	In accordance with Bulgarian legislation: - The public/all physical and legal entities shall be notified about the place and date of the Public discussion (PD) not later than 30 days before the PD meeting. - Access to the EIA documentation shall be ensured for a period of 30 days prior to commencement of the Public Disclosure.

	- The public/all physical and legal entities shall submit their comments and statements in writing at the Public Disclosure meeting and propose those for discussion at the meeting.
Expected start and duration of public consultation	The Public Consultation Process will start when the EIA Report is elaborated and has obtained a positive quality assessment by the MEW . The expected start for Public Consultation Process is foreseen for the second half of 2012. However it will depend on the progress of the consultations on the scope of the EIA Report which are not closed currently. The duration will follow legal requirements. In case of a declared agreement on behalf of Republic Romania participation in the EIA Procedure, then the Romanian side will be informed following the legal rules.
Additional information/comments	----------
5. DEADLINE FOR RESPONSE	
Date	2 weeks from the date of receiving the notification