ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIA R)

Of the Investment Proposal

For

Decommissioning of Units 1-4 at Kozloduy NPP

INVESTOR – SERAW

PUBLIC HEARING

15.07.2013 at the town Kozloduy

16.07.2013 at the town Miziya

STATEMENT

OF THE INVESTOR BASED ON THE COMMENTS, PROPOSALS, RECOMMENDATIONS, OPINION AND OBJECTIONS

According to art. 17, para. 5 of the Regulation for the Conditions and the Order for Implementing Environmental Impact Assessment ***(promulgated SG. 25 /18 March 2003, last amended SG. 94/30.11.2012)***

23.07.2013 Sofia

Statement

of the Investor, State Enterprise Radioactive Waste (SERAW), for Investment Proposal (IP) Decommissioning Units 1-4 Kozloduy NPP, concerning the received written statement in terms of proposals, recommendations, opinion and objections as a results of the public hearing, organized as follows:
- at Municipality Kozloduy at 16.30 h on 15.07.2013 - Minutes of meeting (Appendix No 1);
- at Municipality Miziya at 15.00 h on 16.07.2013 – Minutes of meeting (Appendix No 2).

As a result of the public hearings organized on 15.07.2013 at the town of Kozloduy and on 16.07.2013 at the town of Miziya, during the period of public disclosure 13 written statements, in terms of proposals, recommendations, opinions and objections have been received concerning the Investment Proposal while during the public hearings no statement or proposal has been submitted.

The written statements submitted to SERAW during the period of public disclosure, are as follows:

1. *Statement* by Stefan Velikov, Head of group at ENPRO Consult LTD (Appendix No 3)
Conclusions: No comments on the EIAR, CAR and appendices. He supports the statement formulated by the author's team of the EIA Report that the implementation of the Investment Proposal for decommissioning of Units 1-4 at KNPP can be approved.

2. *Statement* by "Theta Consult" LTD (Appendix No 4)
Conclusion: Theta Consult supports the IP. Provided that during implementation of the investment proposal the measures set-up in the EIA Report are applied, „the impact on the environment and the population will be negligible and the influence of irradiation by ionizing radiation and other occupational risks for performers will be within the statutory requirements."

3. *Statement* by Energy Supply Safety Directorate, Ministry of Economy and Energy (Appendix No 5)
Conclusion: After reviewing the entire report for EIA we fully support the conclusions that the expected impacts are very low, and radiological impacts are much lower than during the time of operation of Units 1-4 and after their shut down. Transboundary impact on the implementation of the investment project is not expected".

The following recommendations are made:
"Some editorial comments can be made to the report mostly related to the correctness of used terms and definitions, which is not essential for its quality." The corrections are enumerated by chapters, sections, pages of the EIAR.

Comments on Chapter1 Annotation p. 2/154
"On page 2/154 is mentioned, that the strategy for decommissioning is updated and the selected option is "continuous dismantling", but then is commented the option about safe storage and deferred dismantling, which is the old version of the strategy.

The two options of the strategy should be distinguished more clearly with a clear outline of the selected option. In the used documents the Strategy for Spent fuel management and RAW by 2030 should find a place, which also sets the option "Continuous dismantling" and set a final deadline for completion of activities by 2030."

Answer: The Annotation of the IP in the EIAR makes a retrospective overview of the decision-making process for the decommissioning of the Units which were shut-down and also summarizes the observed strategies of nuclear facilities decommissioning. The Strategy for Spent fuel management and RAW by 2030e is also considered in the course of EIAR elaboration.

Comment on Chapter 1 Annotation p. 5/154/
On page 5/154 in the report it is stated that KNPP-1 and KNPP-2 consist of 2 Units each one, which is not correct. As the authors have noted at the same page, these are stages of the construction of KNPP. Until transfer of Units 1-2, and later of Units 3-4 to SERAW, they were part of KNPP, differentiated as Electricity Production-1 (EP-1). It is not correct to consider Units 1-4 as separate NPPs.

Answer: The author's team have made an historical review of the construction stages of Units 1-4 at Kozloduy NPP.

Comment on Chapter1 Annotation p. 11-12/154
On page 11-12 in the description of the existing systems for liquid RAW the Facility for treatment of liquid RAW (Danube system), which is already in operation, is not mentioned.

Answer: The Facility (Danube system) is considered in the EIAR, Chapter 1, p. 64.

Comment on Chapter 1 p. 15/154/
On page 15/154 is described the organization of dosimetric control at KNPP. Taking into account that currently Units 1-4 are owned by the SERAW and are not covered by the dosimetric control of KNPP, then it shall be described the organization of the dosimetric control performed by SERAW for Units 1-4. Upon the section treating the in-house dosimetric control again it was written about KNPP personnel individual dosimetric control. It is more correct to talk about the organization of individual dosimetric control of the personnel of Units 1-4.

Answer: The ownership of Units 1-4 was transferred from KNPP to SERAW, respectively by Decision 839/20.12.2008 of the Council of Ministers for Units 1 to 2 and by Decision 1038/19.12.2012 of the Council of Ministers for Units 3-4. The dosimetric control in terms of scope and content is performed according the approach described in the report, based on the agreement concluded between SERAW and KNPP.

Comment on Chapter1 p. 16/154/
On page 16/154 is commented the Automated Information System for External Radiation Control and other systems for radiation monitoring. It should be clear that the system of radiation control is for the whole site (the system is operated by KNPP, but the results are used by SERAW).

Answer: Kozloduy NPP operates this system but the results are submitted for use also of SERAW based on the signed agreement.

Comment on Chapter1 p. 17/156/
On page 17/156 in the record for control of radiation environment, which is implemented by Operative Radiological and Dosimetric Control Section, Operation Division, should be clarified that they belong to KNPP. However the information is not presented if SERAW performs self-monitoring of radiation or uses only the results of KNPP.

Answer: The environmental radiation monitoring ("control of the radiation environment") was performed by Operative Radiological and Dosimetric Control Section, Operation Division of KNPP and the results were used by SERAW according the concluded agreement. At present this section is part of the SERAW structure.

Comment on Chapter 1 p. 19/156
On page 19/156 in the part "personnel engaged in activities at Units 1-4 at KNPP" it is recorded that in 2011 the staff working in EP-1 is 700 people. This only applies to Units 3 and 4. The staff working at Units 1-2 is not reported which at this time were part of the Decommissioning SD of SERAW and they are 180 people. Concerning the personnel of Units 1-4, it is more correct if this number was reflected separately and was not included in the staff of the external organizations. The data for the staff of the external organizations is stated at 2008 horizon. Given that the report was prepared in 2012, the actual data shall be presented.

Answer: The quoted paragraph is part of the historical overview of the employment at KNPP EP-1. The personnel needed for the implementation of the decommissioning activities is specified later on the same pate.

Comment on Chapter 1 p. 32/156
On page 32/156 in "Existing activities" it is described that the decommissioning shall be carried out in parallel with the operation of Units 5 and 6 and of the Dry Spent Fuel Storage Facility. The operation of the Wet Spent Fuel Storage Facility was not assumed, which is also in operation. The used combination "operational life" in Bulgarian is not correct. It is more acceptable to use "term of operation".

Answer: The Wet Spent Fuel Storage Facility is taken into account for the assessment of the cumulative effect see p. 72/122 on Chapter Transboundary aspect of the EIAR of this Investment Proposal.

Comment on Chapter 1 p. 38/156/
On page 38/156 it is assumed that if the license for the decommissioning of Units 1-2 shall be issued in 2013, then the dismantling activities could begin in 2013. It should be noted that dismantling activities in the turbine hall are being done also at the moment, under the terms of the license for operation of Units 1-2 as facilities for RAW management under a program approved by the NRA.

Answer: SERAW is fulfilling dismantling activities under the license for operation of Units 1-4 as Facilities for RAW Management.

Comment on Chapter1 p. 38/156/
In the figure illustrating the differences between the old and the updated strategy for decommissioning probably is used an old drawing, which should be corrected, as it is now written "existing" against the old strategy and against updated one-"proposed". With adjustments figure 1.5-1 shall match the caption beneath it.

Answer: Editorial mistake.

Comment on Chapter1 p. 39/156/
On page 39/156 the name of the "Decommissioning of nuclear facilities" Fund should be spelled correctly. This also applies to other citations of the Fund in the text.

Answer: Editorial mistake. Read "Nuclear Facilities Decommissioning Fund".

Comment on Chapter1 Annotation p. 56/156
On page 56/156 in the topic "Post dismantling decontamination and treatment of RAW" are described various methods that are applicable to these activities. Project 12a "Size Reduction and Decontamination Workshop" (SRDW) is not mentioned that will perform many of these activities and shall apply the described methods. A reference to item 1.6.1.2.1 can be made in order to avoid duplication with its later.

Answer: Editorial mistake, the reference is missing.

Comment on Chapter1 p. 61/156/
On page 61/156 which already commented SRDW as a goal of the project is written: "…in order to minimize the intermediate storage and the volume of RAW for transmission to SERAW for the further management". It should be noted that the workshop is a project that was transferred to SERAW and managed by the company and after the project completion it shall be brought in as an asset to SERAW. The goal should be adjusted to meet the current state of the property of project, as well as the allocation of the duties between the specialized divisions in SERAW, i.e. to specify that RAW is transmitted to RAW SD.

Answer: According to SERAW organizational and management structure the text in EIAR is correct.

Comment on Chapter 1 p. 76/154/
On page 76/156 is stated that the annual heat energy consumption for the whole site was reduced from 403 000 MWh after stopping in 1990 to 2000. It is not clear what stop is meant.

Answer: The mentioned information concerns EWN experience from the decommissioning of the five Units of Greifswald NPP.

Comment on Chapter 1 p. 87/156/
On page 87/156 the title of table 1.11.2-1 shall be in accordance with the text above it, i.e. that it is a liquid RAW, generated from Units 1-4 at KNPP, and not the whole NPP.

Answer: The title of the table is in accordance with the presented text and data in the table are correct. EP2 data are presented for information and comparison.

Comments on Chapter 1 p. 87/156
On page 101/156 in "Sources and characteristics of solid RAW during stage 1 and stage 2 of decommissioning" is stated that approximately 4 500 000 tons of materials are expected to be received. In this forecast is it taken into account that demolition of the Turbine hall and reactor workshops is not envisaged? The estimation of the materials from the Turbine hall is for approximately 500 000 tons.

Answer: In the EIAR is written 450 000 tons, which is correct value.

Comments on Chapter II
We recommend in "Economic consequences" of this chapter to give a fair description of the EU's support for the decommissioning activities. In the text is stated that financial support from EU for decommissioning is defined in the special program for the period 2000-2011. According to the adopted EU programs and documents the financial support in 2000 to 2009 is under a special program (PHARE and according to article 30 of the Accession Treaty). The program was expanded during the period 2010 to 2013 by the regulation of the Council Euratom/647/2010 regarding financial support of the European Union with respect to the decommissioning of Units 1-4 of KNPP (Kozloduy program).

Answer: EU financial support for decommissioning is included in special programs, which are not subject of EIAR.

Comments on Chapter II
On page 22 is stated that "shut down of the KNPP Units" must be done in terms of existing licenses for operation in so-called operational phase "E" while issuing license for decommissioning. In the text should be accounted availability of licenses for management of Units 1-2 and 3-4 as facilities for management of RAW, which are issued to SERAW after removal of the spent fuel from the reactor pools and the transfer of the units to SERAW. Thus the conclusion of the consequences of the delay in the issuance of licenses for decommissioning should be reviewed, given that the spent fuel is removed and dismantling activities are performed under the so existing licenses. We recommend to be given actual data for the personnel at Units 1-4 as of May-June 2013, which is not 970, but 673.

Answer: The EIAR applies more in-depth approach for the assessment of the economical consequences. The point made in the comment is in support of the choice selected alternative. The personnel data are up-to-date in reference of the date of submission of the EIAR to the competent authority for quality assessment and the identified trend is correct, namely "…given that the current staff number at Units 1-4 at 01.05.2012 is under 970 persons, is progressively decreasing …"

Comments on Chapter III
In item 3.11.1 "Ionizing radiation" is stated that "Ionizing radiation is characterized by alpha, beta, gamma, neutrons and x-rays …, which does not sound properly.

Answer: In the EIAR is used publicly understandable terminology which doesn't

make the text wrong.

Comments on Chapter III
The text said that the primary identification of the impact from radionuclide was adapted to measure gamma radiation. Usually the following are measured: dose rate of gamma radiation, specific and total activity, depending on the measurement method. It should be clarified what is measured or more generally written that there are measured parameters of gamma radiation.

Answer: The clarification can be found in the next sentence of the EIAR.

Comment on Chapter III
In the same chapter is commented that "is not fixed the background radiation and assuming an average value for the area, which for our country is 0.10 μSv/h". Values of the background radiation in Bulgaria are between 0.08 and 0.45 μSv/h, according to the data from MEW, i.e. the average value for the country is not mentioned in the text that contradicts the declaration of page 220. Perhaps the authors considered background in the area of Kozloduy and in this case the phrase "for our country" should be abolished and replaced by a "region of Kozloduy".

Answer: In this sentence it is understood the territory around Kozloduy in R. of Bulgaria.

Comments on Chapter III
It would be good if in the description of the National Automatic System for Continuous Monitoring of the gamma-background radiation (RaMo) to be added and included additionally the stations in the villages within 30 km emergency planning zone of KNPP- about 15.
On page 215, to add to the description of the gamma radiation background monitoring in the Republic of Bulgaria made by RaMo, Executive Environment Agency- MEW, National Centre of Radiobiology and Radiation Protection-Ministry of Health and National Institute of Meteorology and Hydrology- Bulgarian Academy of Science, also the posts of Chief Directorate Fire Safety and Civil Protection- Ministry of Interior, as well as the municipal posts.

Answer: The supplement with additional station would not influence the statements of the EIAR and would not lead to a modification in the conclusions of the authors of the report.

Comments on Chapter VI
In chapter 6 "Measures against significant adverse effects" in part "Emergency planning" is recommended to follow the instructions on the Emergency plan of KNPP during decommissioning of Units 1-4. It should be noted that SERAW has its own Emergency plan and reference to it shall be made.

Answer: Because of the fact that SERAW's Units 1-4 are located on KNPP site the emergency plans for Units 1 to 4 are coordinated and synchronized with the KNPP Emergency plan. In case that the KNPP Emergency plan is activated, the SERAW personnel is obliged to follow its instructions.

4. Statement by Anton Ivanov - Member of the Bulgarian Energy Forum (BEF) boards of managers
No comments on the EIAR. In conclusion it is mentioned that the team of independent experts, who have prepared the EIA Report has managed to complete the task. He supports the implementation of the IP. The report is convincible when demonstrating that the proposed option for decommissioning of Units 1-4 of Kozloduy NPP is suitable and corresponds to the current EC regulations and the provisions of the Bulgarian legislation.

5. Statement by eng. Svetoslav Iliev Andonov, regarding EIA Report on the decommissioning of Units 1 to 4 at KNPP (Appendix No 7)
Conclusions: Finally, it should be pointed out that the team of independent experts who prepared the EIA report, using the experience of Greifswald NPP on decommissioning of similar units to those of Kozloduy NPP has done with the task.

6. Statement by Quality Division, Safety and Quality Directorate of *KNPP* (Appendix No 8)
Conclusion: Based on the analyses, studies and investigations exposed in both reports – the EIA Report and CAR, KNPP express its statement that the considered impacts on the environment and occupational and public health anticipated for the decommissioning of Units 1 -4 of KNPP during the pre-decommissioning stage, stages 1 and 2 of decommissioning and the stage of closure and land reclamation, are very low and could be additionally reduced by implementing the proposed measures.

7. Statement by Dr Zhana Dzhunova, MD, Head of Radiation Safety and Medical Provision Section of the National Centre of Radiobiology and Radiation Protection (NCRRP) (Appendix No 9)
Conclusion It can be concluded that the implementation of the Investment Proposal will not have effect on the health of the personnel on Kozloduy NPP site and the population within the 30 km area around it.

8. Statement by Professor Dimtcho Evstatiev - Chairman of the Bulgarian Group to the International Association of Engineering Geology (Appendix No 10)
Conclusion: Geological, Geotechnical and Hydrogeological parts of the EIA report reflect the state of the geological environment and expected effects on the decommissioning of Units 1 to 4 of NPP "Kozloduy". Suggested corrections made by me do not alter this conclusion and aim to improve the quality of the report.

Recommendations: Exception of this conclusion are the forecasts on page 35 in Ch. 4.5 for the impacts on the earth, where in point **B) Stage 1 of decommissioning** was written "equipment dismantling outside the SE area could cause short-term negative impact on the sustainability of the foundation, which could unlock the engineering geological processes in the region of the site".

Similarly, on page 35 in Ch. 4.5 in section **B) Stage 2 decommissioning** is predicted that "In case of delayed installation it could adversely affect the strength of the geological environment, leading to worsened physical and mechanical properties of the medium. In followed transportation of the dismantled materials there is a real risk of ex-loading of the geological environment in terms of load capacity and as a result are possible technogenic geological processes that shall affect the seismic

sustainability of the whole site, not just fragmented impact of the commented countertops."

Answer: The EIAR has followed the conservative approach to consider the worst scenario and the above mentioned case is an indicative example. Independently of this a temporary monitoring regime is foreseen to be set-up during the dismantling activities particularly for controlling each modification in the qualitative characteristics of the environment and this action as it was formulated in the EIAR conclusion.

9. Statement by PhD Dontcho Karastanev-Director of the Geological Institute of the Bulgarian Academy of Sciences (Appendix No 11)
Conclusion of the statements author: the estimation of the report is that it is of good quality and its main targets are reached and the author of the statement supports the proposal made by the authors of the EIA report, namely: the Supreme Expert Environmental Council to MEW to approve the implementation of the investment proposal of SERAW for "Decommissioning of Units 1 -4 at KNPP".

Recommendation: In the future program of environmental monitoring, special attention to be paid to the geological environment (including groundwater), and an assessment of its condition to be performed before the start of the decommissioning of Units 1 -4 and corrective and compensatory activities, including during the closure and reclamation stage to be identified.

Answer: On KNPP site continuous surveillance of the soils and ground waters is performed. The recommendation will be taken into account in the preparation of the Environmental monitoring program of SERAW by including a surveillance of the component "geological environment" (earth interior), covering soils and groundwater.

10. Statement by Prof. V. Velev and Assos. Prof. K. Filipov, Technical University Sofia (Appendix No 12)
Conclusion: The presented EIA report on the decommissioning of Kozloduy NPP Units 1-4 gives real information on the essence of the problem and has been developed professionally, taking into account the specific characteristics of the task.

11. Statement by Radka Ivanova, Charman of the Association "Women in the nuclear industry – Bulgaria" (Appendix No 13)
Conclusion: The association "Women in the nuclear industry -Bulgaria" gives its positive opinion on the the performed environmental impact assessment of the decommissioning of Units 1-4 at Kozloduy NPP.

12. Statement by Assos. Prof. Dimitar Tonev, Director of the Institute for Nuclear Research and Nuclear Energy (INRNE) at Bulgarian Academy of Science **(Appendix No 14)**
Conclusion: He supports the statement of the author's team of the EIA Report for approval of the investment proposal for the decommissioning of Units 1 to 4 at KNPP.

13. Statement by eng. Vencislav Vassilev, Regional Manager of the Vratsa District (Appendix No 15)

Conclusion: Provided that all foreseen measures and requirements of the Bulgarian regulations and the safety standards of the International Agency for Atomic Energy are observed, the realization of the investment proposal for decommissioning of Units 1-4 at KNPP, will not have negative impact on the status of environment and will not worse the health of the personnel at the plant site and of the population in the 30 km zone, including the territory of Romania.

Question during the public hearing on 15.07.2013 at town Kozloduy:

There was a verbal exchange of opinions on behalf of Mr. Stanislav Tsibrov, unemployed:

- What decision on EIA of MEW pursuant to art. 99, para. 2 of the EPA (Environment Protection Act) will be presented to the regulatory body in 45 days from the present public discussion, having in mind that at the moment there are decommissioning procedures running and the permission for that procedures is issued by the regulatory body which is the Nuclear Regulatory Agency (NRA)?

Answer by Dilyan Petrov, Executive Director of SERAW:

- SERAW is holder of the license for management of Units 1-4 as Facilities for RAW Management, issued by NRA, which means that we have permit for dismantling activities. The licenses for decommissioning will be given to SERAW after obtaining the decision on EIA by MEW, and the licenses will be differentiated – first will be issued the license for the decommissioning of Units 1 and 2, and after that will be issued the license for decommissioning of Units 3 and 4.

Question from Mr. Stanislav Tsibrov:

- Isn’t that a violation of the Bulgarian legislation?

Answer by Dilyan Petrov, SERAW Executive Director:

No, it is not, because the same Agency gave us permit for the activities, which we are performing at the moment. SERAW has a license as Facilities for RAW Management for Units 1 to 4 issued by NRA and favourable opinion on the quality of the reports for EIA and CAR.