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КОНСУЛТАЦИЯ № 57935
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Date March 31, 2026

Westinghouse Budgetary Offer **Budgetary Offer for Fission Products Analysis Computer Program for KNPP**

WHEREAS, on March 4, 2026, Kozloduy NPP ("KNPP") submitted to Westinghouse Electric Sweden AB ("WSE") a request for budgetary proposal for the Fission Product Analysis Computer Program ("FPA");

WHEREAS, Westinghouse's broad software portfolio in support of core and fuel-related activities includes the FPA code;

THEREFORE, WSE is pleased to provide KNPP with this offer for a license to use the executable version of the FPA Computer Program and associated training.

1. SCOPE OF SUPPLY

1.1 Tool for Identification of Leaking Rods FPA

FPA is a software Computer Program, developed by Westinghouse, which assists utilities in the evaluation and monitoring of their fuel integrity. FPA incorporates decades of Westinghouse's expertise with analysing primary-side coolant activity data into a user-friendly and robust executable Computer Program. In addition to determining the number of leaking rods, FPA is also able to determine the burnup of those rods to aid in locating the specific leaking fuel rod. FPA is Westinghouse's third generation coolant activity evaluation Computer Program and can be run by utility personnel with minimal coolant activity experience.

The FPA system relies upon fission-product diffusion-release methodology together with empirically developed fuel leaking correlations. FPA has the capability of evaluating Xe-

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* Electronically approved records are documented in the Electronic Document Management System (PRIME).

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133 noble gas measurement data together with four iodine nuclide measurement data to provide assessment of the number of leaking rods. An estimate of the burnup of the leaking fuel is also provided by using correlations of Cs-137 to Cs-134 ratios. In addition, FPA tracks and displays other fuel integrity parameters, primary isotopic activity levels, isotopic ratios, Institute of Nuclear Power Operations (“INPO”) Fuel Reliability Indicator (“FRI”) and others. Use of the FPA Computer Program is not specific to fuel delivered by the Supplier and has also been verified to be applicable for other designs of the VVER fuel.

The state-of-the-art version of the code, version 1.2.1 is optimized for Linux system and is not supported in Windows operating system environment. WSE proposes that the code can be installed on the same Linux server as previously supplied for the purpose of APA-H code analyses. Another option is, if so requested by KNPP in the final offer, that WSE can provide a quote for delivery and site installation of a dedicated Linux server for running the FPA software.

1.1.1 Initial license fee and support

The scope of the supply includes the initial license fee, software delivery, manuals and guidelines for installation and testing procedures, support for installation and running the code up to 100 engineering man-hours, and FPA software user manual in English. The budgetary price does not include translation of the documentation to Bulgarian language. This service can be offered in the final offer upon charging the direct costs for the service to KNPP with 15 % addition for Westinghouse administration purposes.

The FPA code license is offered in two alternatives, to be utilized for evaluation of data for one or two VVER-1000 units of KNPP. Price for extension to second unit includes the license fee and does not include additional hours of support or deliverables.

1.1.2 Annual license fee and support

The code is offered with annual support for fixing potential bugs, version update (if available), and other support per KNPP request up to 30 engineering man-hours. First annual fee is charged 12 calendar months after code delivery and acceptance.

Price for extension to second unit includes the license fee and does not include additional hours of support.

1.2 Training Package for FPA Code

Associated to the code license offer, WSE offers a training package, covering the FPA code and coolant activity evaluation in one of the alternatives described below. WSE strongly recommends adding one of these training options in case of FPA purchase since the understanding of the code theory and methodology as well as the practical evaluation steps is of great importance when starting to use the code.

The description provided in this offer below includes both alternatives A and B, however, the budgetary price is provided for Alternative A only. Price of the Alternative B can be provided to KNPP in the final offer if so requested by KNPP.

1.2.1 Alternative A, FPA Training 2+1 days (budgetary price provided in section 5 below)

This training alternative is both giving the theoretical background needed, but with more focus in how to run the code with several exercises and examples. The training will include technical basis, evaluation, and analysis of coolant activity and hands-on experience with extensive use of the FPA 1.2.1 Computer Program for analysis of sample and utility coolant activity data. This is a practical knowledge class for utility personnel who must have prior awareness of coolant activity evaluation, but do not routinely perform detailed coolant activity analysis (from a methodology perspective).

The third day is held as a workshop and Q&A session 2-3 months after the first two training days with the purpose to review some of the exercises and data evaluations where questions has been posed and answer any questions on the FPA software that has come up as the participants have started to use the computer program at their utilities. A list of specific questions to be addressed during workshop 2 shall be provided to WSE three (3) weeks prior to the requested course date as well as potential coolant activity data needed to respond to the questions.

Schedule and Content of the training, Alternative A

1	Introduction	1 hr	Contents, schedule, objectives, data overview, examples	Day 1
2	Coolant Activity Monitoring	1 hr	The data requirement for coolant activity monitoring, such as monitoring frequency and isotopes required for data analysis.	
3	Coolant Activity Data Evaluation	4 hrs	Review of data evaluation methodology, leakage mechanisms and activity ratios. Description of how isotopic data are used for coolant activity analysis such as isotopic spiking, calculating fuel burnup and the use of ratios both for identification of number of leaking fuel rods and for determining the type of leaker. Summary overview of leakage mechanisms and the methodology of identifying the potential cause of the leaking fuel (mechanisms such as corrosion, PCI/PCMI, clad wear and	

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			manufacturing related leakers) including overview of secondary degradation and activity signatures (open/tight defects)	
4	Description and use of FPA 1.2.1 Computer Program (overall description, features and analysis overview)	2 hrs	High-level introduction to the FPA-code including a walk-through of a FPA analysis (defining plant, importing dataset, plotting and calculations of number of leaking rods, burnup of the leaking fuel)	
5	Review of Day 1	1 hr	Review of previous Sections and any questions that the participants might have from Day 1	
6	Plant data analysis for sample plants using FPA 1.2.1 Computer Program	5 hrs	Walk-through of FPA analysis for 2 sample plants and thereafter individual exercises covering both qualitative and quantitative plant data analysis.	Day 2
6	Plant data analysis for utility plants using FPA 1.2.1 Computer Program	2 hrs	Individual exercises of utility provided plants will include both qualitative and quantitative plant data analysis.	
7	Workshop and Q&A session	6 hrs	Review and discussion of plant data or sample data evaluations where questions has been posed and to answer any questions on the FPA software that has come up as the participants have started to use the computer program at their utilities.	Day 3

1.2.2 Alternative B, FPA Training 4 days

(scope for information, price to be provided in final offer upon request)

This training alternative provides a more detailed background to coolant activity in general as well as the methodology and theory behind the FPA code. The training will still include hands-on experience with extensive use of the FPA 1.2.1 Computer Program for analysis of sample and utility coolant activity data.

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Schedule and content of the training, Alternative B

1	Introduction	1 hr	Contents, schedule, objectives, data overview, examples	Days 1 & 2
2	Coolant Activity Monitoring	2 hrs	The data requirement for coolant activity monitoring, such as monitoring frequency and isotopes required for data analysis.	
3	Leakage Mechanisms	2 hrs	Review of known leaking mechanisms such as corrosion, PCI/PCMI, clad wear and manufacturing related leakers with more examples and background than alternative 1, including the methodology of identifying the potential cause of the leaking fuel. The mechanism of secondary degradation and activity signatures (open/tight defects)	
4	Systematics	10 hrs	Technical basis for coolant activity assessment covering inventory equations, tramp activity and source rate from leaking rods. Evaluation of Number of Leaking Rods describing the iodine and xenon model theory including exercises as well as technical basis for burnup calculation	Day 3
5	Data Evaluation	4 hrs	Review of data evaluation methodology, leakage mechanisms and activity ratios. Description of how isotopic data are used for coolant activity analysis such as isotopic spiking, calculating fuel burnup and the use of ratios both for identification of number of leaking fuel rods and for determining the type of leaker. Summary overview of leakage mechanisms and the methodology of identifying the potential cause of the leaking fuel (mechanisms such as corrosion, PCI/PCMI, clad wear and manufacturing related leakers) including overview of secondary degradation and activity signatures (open/tight defects)	

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6	Plant Data Analysis - Qualitative	4 hrs	Performing cycle evaluations without code on sample data sets	
7	FPA Description and Use	2 hrs	Presenting code, capabilities, how to use code. Walk-through of FPA analysis (defining plant, importing dataset, plotting and calculations of number of leaking rods, burnup of the leaking fuel)	Day 4
8	Plant Data Analysis - Quantitative	5 hrs	Performing cycle evaluations with code on sample data sets, customer's plant data	

1.2.3 Training general provisions

The training package shall include:

- Formal classroom workshop training;
- On-the-job or hands-on training;
- Post-training consultation;
- Training materials and other supporting documentation (workbooks, databooks etc.).

Class size is limited to maximum ten (10) students. A certificate of completion shall be provided to Customer's trainees upon completion of the training program.

The training programs and all related documentation shall be in English. The budgetary price does not include translation of the documentation to Bulgarian language. This service can be offered in the final offer upon charging the direct costs for the service to KNPP with 15 % addition for Westinghouse administration purposes. The training lecturers shall speak fluent English. The workshops will be held in English; it is the responsibility of KNPP to arrange for a translator if needed.

The location of the training workshops shall be agreed between the parties. Options for the training are in WSE offices in Västerås Sweden, WSE offices in Sofia, or KNPP offices in Kozloduy. Should the training be organized in WSE offices, KNPP trainees shall bring their own laptop with established remote access to KNPP Linux cluster where FPA will be installed. Should KNPP offices be utilized, KNPP shall provide Wi-Fi access to Westinghouse personnel performing the training.

2. DELIVERY

The date of delivery of the FPA code and training shall be agreed upon between WSE and KNPP. WSE proposes to target the delivery the code later in 2026 with training early in 2027.

3. PURPOSE AND LICENSE VALIDITY

The FPA code license is offered in two alternatives, to be utilized for evaluation of data for one or two VVER-1000 units of KNPP. In case of selecting license for one unit only, KNPP may opt on data of which unit can be analysed with the code.

4. RIGHTS AND RESPONSIBILITIES

KNPP may use the code for evaluation of the data for KNPP units 5 and 6 reflecting the license validity defined in Section 3 of this offer. The program and the license are not transferable to any other party without permission of WSE provided in written.

5. BUDGETARY PRICES

The price for the scope of supply defined in paragraph 1.1 is:

5.1 License validity for the first KNPP VVER-1000 unit

Price for initial license transfer and support (item 1.1.1): **USD 100,000.00**
(one hundred thousand US dollars)

Price for annual license and support (item 1.1.2): **USD 25,000.00**
(twenty-five thousand US dollars)

5.2 License validity for the second KNPP VVER-1000 unit

Price for initial license transfer (item 1.1.1): **USD 18,000.00**
(eighteen thousand US dollars)

Price for annual license (item 1.1.2): **USD 5,000.00**
(five thousand US dollars)

5.3 Training Alternatives A and B

Price for the training package (item 1.2.1): **USD 195,000.00**
(one hundred and ninety-five thousand US dollars)

Price for the training package (item 1.2.2): **To be provided upon request in final offer**

The price includes Delivered at Place (DAP), but excluding value added tax (VAT).

6. VALIDITY

The budgetary offer is provided for information purposes only and does not constitute a binding offer from Westinghouse and cannot be used as a base for an order. If after reviewing this information you are interested in pursuing this purchase, Westinghouse would be pleased to provide you with a formal final offer.

7. QUALITY AND CONTROL

Westinghouse provides services in accordance with the Westinghouse Electric Company Quality Management System (QMS). This system meets the requirements of the United States Nuclear Regulatory Commission related to quality control and quality assurance including the requirements set forth in 10CFR50 Appendix B and also the standards set forth in ISO 9001 / ISO 14001.

8. General terms and conditions

The specific Terms and Conditions of the agreement are defined in this offer letter. All other general Terms and Conditions are according to standard Westinghouse Terms and Conditions which will be provided to KNPP as part of the final offer.

9. CONTACTS

For technical questions, please contact our Fuel Solutions Manager: Libor Klecka
Telephone: +46 732 367 298, e-mail: kleckal@westinghouse.com

For Legal and Commercial questions, please contact our Fuel Solutions Manager: Libor Klecka
Telephone: +46 732 367 298, e-mail: kleckal@westinghouse.com

Or VVER Fuel Business Director: Per-Olof Siberg
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We look forward to your response to this proposal. Please do not hesitate to contact us if you have any questions.

Yours sincerely,

Westinghouse Electric Sweden AB

*Per-Olof Siberg**

VVER Fuel Business Director

*Maria Petersson**

Director BWR Fuel Business
and VVER & BWR Fuel Delivery