



NUCLEARELECTRICA

President of the Board of Directors

Robert Iulian Tudorache

Note subjected to the approval of the General Meeting of Shareholders regarding the Strategy for diversifying the raw material supply sources required for nuclear fuel production

1. Current status

Since 1994, the National Uranium Company (“CNU”) (through its unit in Feldioara) was certified by the "Nuclearelectrica S.A.” National Company (“SNN”) as supplier for the uranium dioxide powder, according to the Technical Specification prepared by the Atomic Energy of Canada Ltd. (“AECL”), the developer of CANDU technology, as well as standard 06 of the National Commission for Nuclear Activities Control (CNCAN), respectively standard 07 of NMC, CNU being the sole supplier certified by SNN, on the territory of the EU, and the sole globally certified supplier, until 2008.

In 2007, based on Resolution no. 3 of SNN Board, the purchase, by SNN, of some batches of uranium powder from external manufacturers was decided in order to carry out quality and performance tests and trials at FCN Pitesti, to certify new uranium powder suppliers for SNN having at least 2 suppliers certified according to the Euratom Supply Agency (“ESA”) Recommendations. Out of the potential suppliers identified at that time, namely Cameco, Springfields, Kazatomprom, Nukem GmbH and Areva, the only supplier that met all the requirements was Cameco that was certified in 2008.

Starting with 2003 and up to the end of 2015, SNN purchased from CNU the whole amount of uranium dioxide powder required for the operation of Cernavoda NPP Units 1 and 2, meaning about 200 tons per year. Starting with 2016, considering the termination of the contractual relationship with CNU, SNN purchased the uranium dioxide powder from Cameco Inc. (USA), whose manufacturing facility was based in Canada, through several short-term contracts (of 6 months each), concluded following the call for competition addressed to the two certified large suppliers, CNU and Cameco.

At the same time, to ensure the stability and the reduction of the dependency on a single supplier, according to the international standards applicable to the nuclear industry, SNN has initiated successively, during 2016, several certification procedures for new suppliers, but, due to technical reasons related to the customization of the raw material to the technical specifications of FCN Pitesti, no new supplier was certified.

In such a context, SNN still has only two certified uranium dioxide powder suppliers, namely the National Uranium Company (“CNU”) and Cameco Inc. Ltd.. We hereby specify that CNU is in the situation of receiving restructuring aid from the Romanian state for emergency reorganization, and having submitted a relevant reorganization plan with the European

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Commission, currently under analysis. Thus, there is a risk that SNN remains with only one UO₂ certified powder supplier, namely Cameo, a risk-inducing scenario for SNN that conflicts with the ESA Recommendations.

The international practice in the nuclear industry is to ensure the production stability, predictability and continuity, which implies risk management and control throughout the entire fuel chain.

2. Long and medium-term risk analysis of the nuclear fuel generation dependency on a single uranium supplier

Considering the current status, SNN decided to contract a Study to identify, quantify and propose the optimal solutions for SNN to ensure the availability of the raw material for the manufacturing of nuclear fuel at the unit FCN Pitesti.

The Study mainly aims at identifying courses of action based on the assessment of risks to which the Company is exposed, in terms of its dependency on a single nuclear fuel supplier. The Study also considered the following matters as substantiation elements:

- Estimation of the inventory of uranium dioxide required for manufacturing the nuclear fuel required for the Cernavoda NPP operations under the current configuration and under the future extended configuration, including U3 and U4;
- Identification of potential non-enriched UO₂ supply sources (on the internal and external markets);
- Identification of potential supply sources for technically concentrated uranium U₃O₈ required to obtain uranium dioxide in the Romanian plants;
- Identification of actual actions to be undertaken by SNN and the Ministry of Energy to maintain an integrated nuclear fuel generation cycle at least in terms of internal capability to refine the technically concentrated uranium amounts and to convert them into uranium dioxide powder, required to produce the nuclear fuel fascicles;
- Identification of the analysis scenarios concerning the supply of raw material required to produce the nuclear fuel for the power generation units of Cernavoda NPP and their financial assessment;
- Identification and analysis of long-term risks concerning the dependency on a single nuclear fuel supplier, which could affect the activity of Cernavoda NPP;
- Identification of the steps required to maintain an integrated nuclear fuel generation cycle in Romania.

The scenarios identified by the Institute for Studies and Power Engineering (“ISPE”), the author of the Study, are the following:

- **Scenario 1:** Going on further, with two certified uranium suppliers, as the present situation, namely Cameco Canada and CNU Romania;
- **Scenario 2:** Purchasing the uranium octoxide from the international market and processing it locally, such scenario having other 3 possible sub-scenarios:
 - **Scenario 2.1:** SNN purchasing the uranium octoxide, processing it in Feldioara factory, in its capacity of CNU unit, and obtaining of the uranium dioxide which is to be used by FCN Pitesti in order to produce nuclear fuel;
 - **Scenario 2.2:** SNN purchasing the uranium octoxide, processing it in Feldioara factory, in its capacity of SNN unit (pursuant take-over of the factory by SNN from

CNU) and obtaining the uranium dioxide which is to be used by FCN Pitesti in order to generate nuclear fuel;

- **Scenario 2.3:** SNN purchasing the uranium octoxide, processing it in a new factory (owned by SNN) and obtaining the uranium dioxide which is to be used by FCN Pitesti in order to produce nuclear fuel.

For each scenario, a cost-benefit analysis was developed, including scenario description elements and special objective definitions, investment cost elements, a financial analysis, as well as the special risk analysis and assessment. Those scenarios were firstly compared, based on the financial analysis results, and then a safe operation optimal solution was established for the fuel production factory and Cernavoda NPP, based on the internalization of the risk effects quantification.

Based on the results of the financial analysis correlated with the risk analysis results, the financial performance indicators were calculated under the analyzed scenarios, and it was determined that the Scenario 2.1, where SNN purchases the uranium octoxide on the market, which will be processed in Feldioara factory that remains a CNU unit, and obtains the uranium dioxide to be used in FCN Pitesti to produce the nuclear fuel, is the optimal one. The uranium octoxide could be processed in the retrofit/upgraded existing CNU plants in order to obtain uranium dioxide. Such uranium dioxide will be converted into nuclear fuel bundles in FCN Pitesti, a SNN subsidiary.

To mitigate the risks associated with the implementation of such a scenario (2.1), SNN may consider initiating an assessment process in order to identify the optimal solution for the development of SNN's own processing capabilities from U3O8 to UO2.

To implement the optimal scenario outlined by the Study carried out by ISPE, SNN took into consideration a progressive approach, namely the diversification of the supply sources until 2018 by dividing the UO2 needs between the two supply alternatives.

The SNN long-term strategy concerning the raw material supply consists of reaching progressively, at the beginning of 2020, the overall UO2 amount required to generate the nuclear fuel bundles obtained by processing the U3O8 amounts procured. To obtain 1Kg of UO2, we estimate a required quantity of about 1.18Kg of U3O8. This amount could be processed in the Feldioara unit of CNU.

To minimize further the risks related to such activity of providing the raw material in the year 2020, although the supply will consider only the purchase of U3O8 and its processing within the specialized units in Romania, SNN shall keep the current UO2 producers as certified suppliers.

For the position of potential U3O8 suppliers of SNN, we are currently considering for the certification process a competitive procedure.

The amounts required to certify a single uranium supplier, as well as the expenses to be incurred by SNN, shall be determined following the negotiations with CNU related to the unfolding of this process.

3. Proposals

Taking into account the foregoing, as well as the following considerations:

- The mandatory need to maintain a continuity in the activity and functioning of FCN Pitesti and, implicitly, in the power generation activity of the two units of Cernavoda NPP;

- According to the data currently held by SNN at the time, the only solution that we have identified for the diversification of the supply sources and having two qualified suppliers is the alternative in which SNN purchases U3O8.
- Any SNN supplier must to be certified beforehand, according to the CNCAN standards and provisions of the applicable laws in force;
- Currently, SNN does not have the expertise and equipment required to certify U3O8 producers;
- Currently, SNN does not have the authorizations and premises required to store the U3O8 amounts required to be purchased;
- Currently, CAMECO and CNU are the only companies able and certified to supply UO2, according to the technical specifications, and, if, following a competitive procedure, the refining contract is awarded to CAMECO, then SNN will be in the position of no longer reaching the objective of diversifying its supply sources, but only the raw material supplied, remaining further dependent on a single supplier, namely CAMECO;
- The Ordinary General Meeting of Shareholders has the power, according to Article 13(2) letter h) of the SNN Articles of Incorporation, to approve the Company's strategies,

We hereby submit to the General Meeting of Shareholders the following *Strategy for diversifying the raw material supply sources required for nuclear fuel generation, including the initiation of the steps required:*

- Changing the raw material supply policy so as to enable the purchase of U3O8, by switching progressively from the exclusive direct UO2 supply to U3O8 supply, which shall be processed for use in the nuclear fuel production process at the FCN Pitesti unit;
- A procurement procedure ensuring the purchase of the UO2 amount required for a period of 36 months (about 720 tons of UO2) through the conclusion of a framework agreement with the two UO2 qualified suppliers, until the full U3O8 purchase process implementation. This contract for the supply of UO2 shall clearly set forth the delivery terms as well as the fact that those deliveries shall be carried out, based on the SNN request;
- Establishing a contractual relationship with CNU (the Feldioara unit), for each of the following activities:
 - Certification of the uranium octoxide producers, through CNU,
 - Storage of the U3O8 stocks to be purchased by SNN,
 - Refining highly concentrated uranium (U3O8) to obtain UO2.

For the activities abovementioned, the formalities necessary to obtain the support of the Ministry of Energy shall be undertaken in order to ensure that this particular contractual situation falls within the legal framework.

- SNN's purchasing of uranium octoxide from the international market to diversify the supply sources;

- Initiation of an assessment procedure to identify the optimal solution for the development of SNN's own U3O8 to UO2 processing capabilities.

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