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Nuclearelectrica SA activities on SMR's

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15:10 – 16:05 **Small Modular Reactors session**

08:10 – 09:05 Moderator: Diane Cameron – Natural Resources Canada

Paul Thompson – New Brunswick Power - confirmed

Gina Strati - Canadian Nuclear Laboratories - confirmed

Dan Serbanescu **– SNN - confirmed**

Ilie Turcu - ALFRED Demonstrator

TOPICS - SNN PRESENTATION

I. **CONTEXT**

II. **SNN MAIN OBJECTIVES**

III. **SNN ACTIVITIES**

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I. CONTEXT

SMRs are more flexible than large NPP plants

SMRs aim at be more cost competitive, have lower risks than large NPPs, and greater potential for boosting the local industry

Becomes important for SNN to look at SMRs because:

Existing national strategies

Current Romanian energy strategy (under public consultation) favors the construction of Cernavoda U3-4 and installation of Gas powered new capacities and RES

SMR (LWR) and ALFRED (SMR design) to be considered.

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II. SNN MAIN OBJECTIVES INVOLVING ACTIONS ON SMR'S

The Company has a coherent and strong conceptual core of its mission, goals and values. Goals are a comprehensive image of SNN's annual breakdown

Alongside other major producers within the Romanian electricity market, Nuclearelectrica has the mission of meeting the internal demand in the context of assuring nuclear security, environment protection, and the population and staff safety. Among the main characteristics of SNN, one can mention: a high availability factor of the installed capacity, no CO2 emissions, low price elasticity to uranium fuel cost variation, stable and predictable generation costs and high technical expertise of specialized personnel.

The strategic objectives are developed on basis of the national and international context, such as: Romanian governmental support for nuclear energy, the pending necessity of refurbishing the aging Romanian electricity generation assets, an electricity demand synchronized with GDP's development, diversification tendency in relation to energy production facilities (support of renewable generation sources; impact of rising oil prices), development of major energy production companies with large capacities and active international activities.

The SNN's long term strategic objectives are the following:

1. The operation of the nuclear facilities under nuclear safety and security conditions for the personnel, population, environment and production assets;
2. Maintaining the electric energy production capacity above the current average industry level;
3. The achievement of the major investment objectives;
4. The improvement of the Company's financial performance indicators;
5. Ensure the security of supply of raw materials;

6. Diversification of the portofolio of activities;

7. Use of the assets that currently do not generate income.

SNN Development Strategy 2015-2025

Annex 1 – Strategic Investment Plan 2015-2025 CNE Cernavoda and FCN Pitesti

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III. SNN ACTIVITIES ON SMR's

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III.1-SNN ACTIVITIES ON SMR'S INTERNATIONAL MULTILATERAL

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SNN ACTIVITIES ON SMR'S INTERNATIONAL MULTILATERAL

- Involved in IAEA SMR – related projects such as INPRO, RER SMR etc.
- Participation in EU activities (FORATOM, SNETP, FALCON, EU entities/policies)
- USTDA support for review of sites
- Regional European initiatives addressing the issue to the European Commission (Tallin declaration, EDF letter etc.)
- Learn more about the progress of the different SMR technologies

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GOAL at European level with potential USA and Canadian support

Create a pool of SMR supporting organizations *to address to the EC in order to consider the issue as an important one within the union*

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III.2 -SNN ACTIVITIES ON SMR'S INTERNATIONAL BILATERAL

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Bilateral interfaces on future SMR's and generation IV

- MOU – NUSCALE
- MOU – FALCON (under renew)
- Contacts with other technology developers and interested parties
- Interest for solutions in similar fuel cycle environments like in Canada

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Topics of interest on NUSCALE technology (MOU)

Licensing requirements in USA for SMR new generation

- Acceptance criteria (deterministic and probabilistic –details on the evaluation of the multimoodule impact)
- A survey of NRC review/iterfaces

Siting issues

- The neccessary level of detail on the site conditions.
- Details on some (considered by us) important aspecyts of siting as for instance seismicity, water needs, geology.

Electric connection of the multimodules and their interface with the electric system during various operation regimes

Digital solutions for plant control and general plant information system during various lifecycle phases

Maintenance programs and technologies

Use of technology for ecological reconstruction

USTDA support for site screening

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III.4 SNN ACTIVITIES ON SMR'S NATIONAL

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III. SNN ACTIVITIES ON SMR'S NATIONAL

- **Understand the need to collaborate with ANDR and other stakeholders from industry (ROMATOM)**
  - ANDR is in charge with nuclear program development strategy
- **MOU with RATEN to provide support for nuclear power program policy makers.**

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Cooperation initiated (MOU) with research institute Pitesti (RATEN-ICN)

GOAL Support strengthen the role of nuclear energy in the national energy mix.

OBJECTIVES Establish actions for the national strategy in support of:

- **Confirmation at strategic level through valid documents in the medium and long term** of the important role of nuclear energy in the national implementation of European directives
- **Supporting actions both to maintain existing production capacities and to expand production capacities using nuclear technologies**, while also harmonizing the nuclear fuel cycle.
- **Revigorate existing capacity and support the development of a strong long-term local nuclear industry** sustainable and in line with national & international research & development initiatives

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Steps under discussion for the common SNN-ICN activities to update national nuclear strategies

I. **Evaluate the present international. European and national status of SMR/generation IV** context and define the common SNN-ICN organizational framework of cooperation

II. **Define set of preferred energy development scenarios at national level**

III. **Choose the most likely scenario for achieving the national objectives** in the nuclear field and support its implementation

IV. **Evaluate the details of the implementation of the most favorable scenario and its implementation roadmap**

V. **Support common proposals** for complementing the existing national strategies

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