SOCIETATEA NATIONALA "NUCLEARELECTRICA" SA

THE PRIVATE SECTOR INVOLVMENT IN FINANCING NUCLEAR POWER IN ROMANIA

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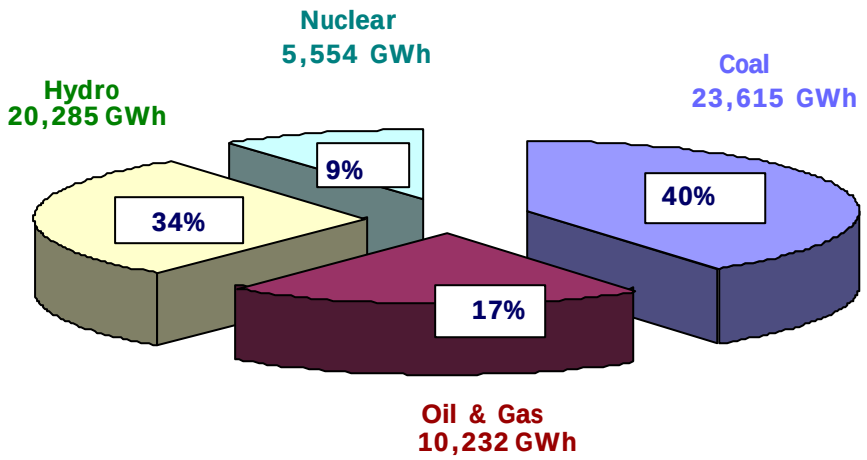
The future of Nuclear Power in Central and Eastern Europe

Budapest, 2006 October 19

THE ROMANIAN POWER GENERATION STRUCTURE IN 2005

TOTAL – 59,686 GWh (gross)



NATIONAL INFRASTRUCTURE FOR NUCLEAR POWER

- **Ministry of Economy and Commerce** is responsible for the national strategy in the energy field and for NPP project implementation and NPP operation, as well for technical support (research & engineering) , nuclear fuel and heavy water.
- **Romanian Nuclear Agency** has the responsibilities for promotion of nuclear energy in Romania and to issue the strategy for development of nuclear field in Romania.
- **Romanian Nuclear Safety Regulatory Body** (CNCAN) has the responsibility of licensing and control the nuclear facilities operation and up-dating of the nuclear safety norms,.
- **Romanian Agency for Radioactive Waste Management** (ANDRAD), operational since 2004, has the responsibility for final disposal and decomissioning, including the development the secondary legislation related to waste management, final disposal and decommissioning of nuclear facilities.

MAIN ACTORS IN ROMANIAN NUCLEAR INDUSTRY

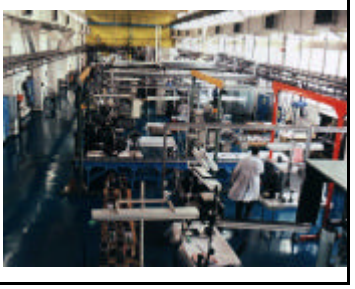
- **NUCLEARELECTRICA (SNN)** – national company, responsible for Cernavoda Unit 1 operation (CNE PROD), finalization of Unit 2 (CNE INVEST) and nuclear fuel fabrication (FCN Pitesti).
- **Regia Autonoma for Nuclear Activities (RAAN)** – national company for heavy water fabrication (ROMAG), nuclear research (SCN Pitesti) and nuclear engineering (SITON Bucharest Magurele).
- **National Company for Uranium (CNU)** – responsible for uranium extraction and purification – supplier of Romanian nuclear fuel manufacturer.
- **Romanian Supliers for Goods and Services** – involved in Cernavoda Unit 1 & 2 finalization and in preparation for Unit 3 an 4 construction.

LOCATION OF THE MAIN ROMANIAN NUCLEAR INDUSTRY

SOCIETATEA NATIONALA NUCLEARELECTRICA (SNN SA)

SNN SA

CNE PROD Cernavoda – Unit 1	CNE INVEST Cernavoda – Units 2 -5	NUCLEAR FUEL PLANT Pitesti
SAFE AND EFFICIENT OPERATION OF UNIT 1	**COMPLETION OF UNIT 2 PRESERVATION OF UNITS 3-5 SOCIAL PROGRAM**	**NUCLEAR FUEL FABRICATION**
•Commercial operation starting with December 2, 1997	•U#2 Project Management: ➢ AECL, ANSALDO and SNN	•Domestic natural uranium
•Gross Output: 706.5 MWe	•Commercial operation: 2007	•Yellow cake produced in Romania
		•Imported Zircalloy components



SOCIETATEA NATIONALA NUCLEARELECTRICA
MAIN OBJECTIVES FOR 2006

1. Enhanced presence of SNN's in the electricity market, concurrently with maintaining Unit 1 oc Cernavoda NPP nuclear safety level, environment and public protection, and the company economic efficiency rates.
2. Constant monitoring of the status of Cernavoda Unit 2 Project: schedule and budget, including high quality of works.
3. Implementing the new site organization chart with two units.
4. Maintaining the high quality of the nuclear fuel produced in the Pitesti Nuclear Fuel Plant and providing constantly the nuclear fuel for two units.
5. Implementing decisions regarding the commercial and financial structuring of Units 3 and 4, on the basis of the relevant Feasibility Study.
6. Preserving the public and authorities' acceptance of the technology we own, operate and develop.

CERNAVODA NPP - UNIT #1

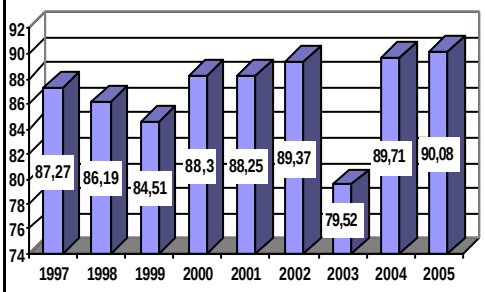




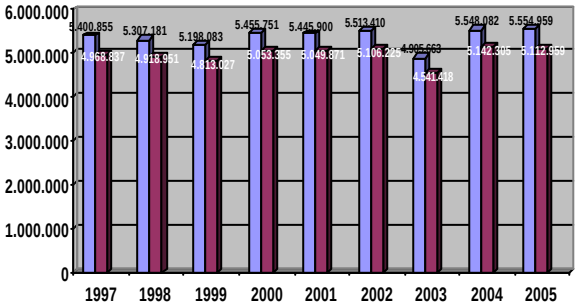
CERNAVODA NPP - UNIT #1

2005 MAIN RESULTS - EFFICIENCY

GROSS CAPACITY FACTOR EVOLUTION



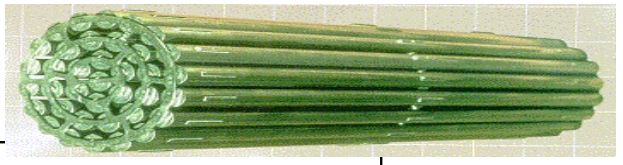
ELECTRICITY GENERATED VS DELIVERED (MWh)

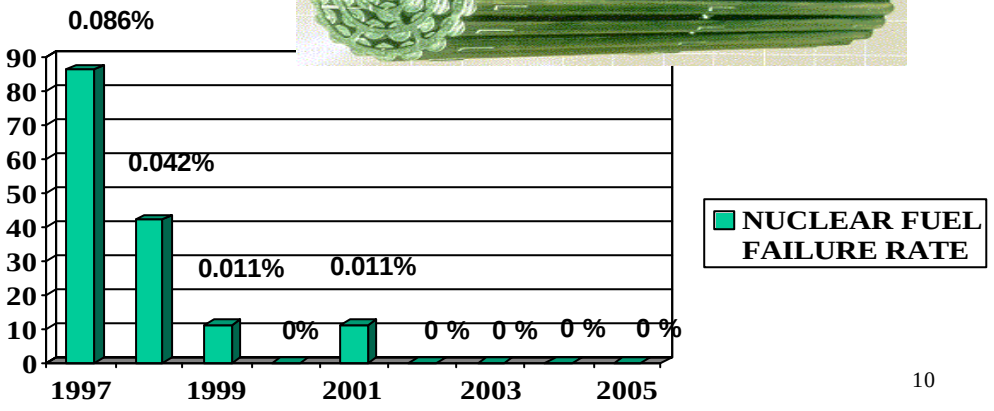


- GROSS CAPACITY FACTOR: SINCE IN SERVICE: 87.20%
- 2003 SHUTDOWN DUE TO THE WATER LOW LEVEL IN DANUBE
- 2005 RECORD GROSS CAPACITY FACTOR: 90.08%
- 2005 RECORD ELECTRICTY GENERATION: 5.554.959 MWh

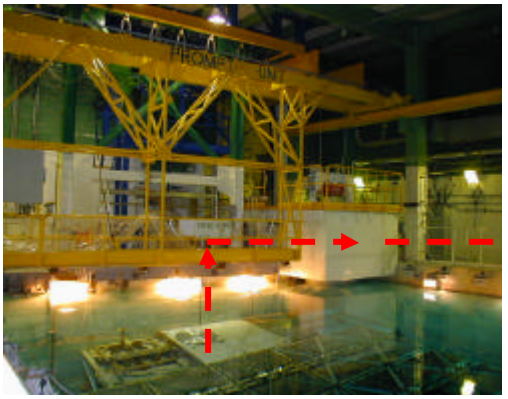
NUCLEAR FUEL PLANT

- The Nuclear Fuel Plant - Pitesti is providing all the necessary nuclear fuel for the Cernavoda – Unit 1 and started fabrication of the first load for Cernavoda Unit 2
- The modernization process is completed and capacity is doubled



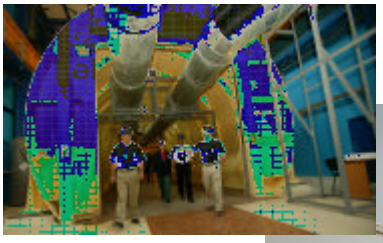


RADIOACTIVE WASTE MANAGEMENT
CERNAVODA NPP UNIT #1:
INTERIM DRY SPENT FUEL STORAGE FACILITY



The first MACSTORE Module operational since May 2003
2005: Started construction for Modules 2 & 3.One finalized in 2006.
Final Capacity (27 modules) - to accommodate for 50 years, the spent fuel produced by two CANDU 6 Units during their operational life time

CERNAVODA NPP - UNIT #2



CERNAVODA UNIT 2
Main milestones of finalization

Milestone	Target
Moderator System D20 filling	2006 Sept. 05
PHTS Hot performance test	Nov. 25
Manual nulcear fuel load	2007 Ian. 03
PHT Sustem D2O filling	Febr. 15
First Criticallity of Nuclear Reactor	Apr. 04
Starting of Commercial Operation	June 22

FUTURE OF NUCLEAR POWER IN ROMANIA

- Based on a strategic decision of the Romanian Government the Unit 3, and 4 of Cernavoda NPP are intended to be completed by 2015
- The Feasibility Study was performed within the context of Romania's need for energy as described by the Government's Road Map for the Energy Sector (released in July 2003):
  - It is estimated that demand will exceed supply by 7,700 MW in 2015 if no remedial action is taken and by 5,400 MW if remedial action is taken.
  - In this context, the Government has announced that it plans to increase nuclear generating capacity to 1,414 MW by 2007 through the commissioning of Unit 2 and to 2854 MW through the commissioning of Units 3 and 4 of the Cernavoda NPP.
- The unique business proposition of the Project resides in:
  - The cost advantage (the levelised unit energy cost for this Project is lower than other forms of electricity generation),
  - Romania having its own heavy water and nuclear fuel manufacturing facilities,
  - Romania's experience and competency in constructing and operating other units,
  - Public support, and
  - Selected adequate technology.
- The study confirm the technical feasibility of the Project (improved CANDU 6 units, with Cernavoda Unit 2 reference project)

CERNAVODA NPP - UNIT # 3 & UNIT # 4

CERNAVODA UNIT 3 AND 4
PROJECT DESCRIPTION

The main characteristics of the project are the followings (based on the Feasibility Study) :

➢ Installed capacity:	2 x 720 MWe
➢ Yearly electricity production:	2 x 5,239 TWh/an
➢ Capital expenses (evaluation):	2,2 miliarde Euro
➢ Tentative schedule for finalization:	64 month per unit
➢ Unit lifetime:	30 years (possible 40)
➢ Electricity selling price:	28,2-32,2 Euro/MWh
➢ Equity Internal Rate of Return:	9-11%

CONSTRAINTS IDENTIFIED IN PROMOTING THE CERNAVODA NPP-UNITS 3 & 4

- The unavailability of the Government's direct financial support in compliance with the Government policy of withdrawing from the electric power sector, considering the liberalization of the electric power market and the specific regulations concerning the subsidies granted by the government.
- The unavailability of sovereign guaranties having in mind the same specific regulations concerning the subsidies granted by the Government.
- The insufficient capability of SNN SA to finance and attract the needed financing resources, taking into account that the government financial support, subsidies and sovereign guaranties are lacking.

THE OPTIMAL SOLUTION FOR FUTURE NUCLEAR POWER IN ROMANIA

- The Cernavoda Unit 3 & 4 can be completed by setting up a partnership with private investors, associated with SNN SA within a joint venture, developed as an IPP (independent power producer) on the Romanian electricity market.
- This partnership with foreign investors would ensure the financing necessary for the project completion, through the initial participation in setting up the joint venture and subsequent loans without sovereign guaranties.
- The selected solution tries to prove the efficiency of such a partnership designed to major investments in the Romanian electric power sector.

THE CHOSEN MODEL FOR CERNAVODA UNIT 3 AND 4 FINALIZATION

- **Joint venture made up of more shareholders, including SNN SA (the so-called "finish model"), no majority shareholder;**
- **SNN SA will contribute to the nominal capital with the existing assets, following the process of negotiations, based on an evaluation report elaborated by an independent evaluator;**
- **Heavy water and nuclear fuel are to be provided from domestic sources;**
- **Shareholders will get electricity at production costs directly proportional to the share of the company nominal capital each shareholder holds ("take or pay")**

ADVANTAGES OF SELECTED MODEL FOR CERNAVODA UNIT 3 AND 4

1. **The selected model is already accepted by the European Union (used in Finland) and comply with the regulations of the liberalized electricity market**
2. **Financing sources (initial equity and loans) provided by investors.**
3. **The "legitimate" needs of the energy industry – representing 35% of Romania's GDP – can be solved (as the European Union recommends in the Electricity Green Book, chapter 2.1 (v))**
4. **The large number of shareholders of the Project Company, in their quality of energy suppliers, enhances the competition on the electricity market and helps avoiding the control on over 10TWh/year electricity production**

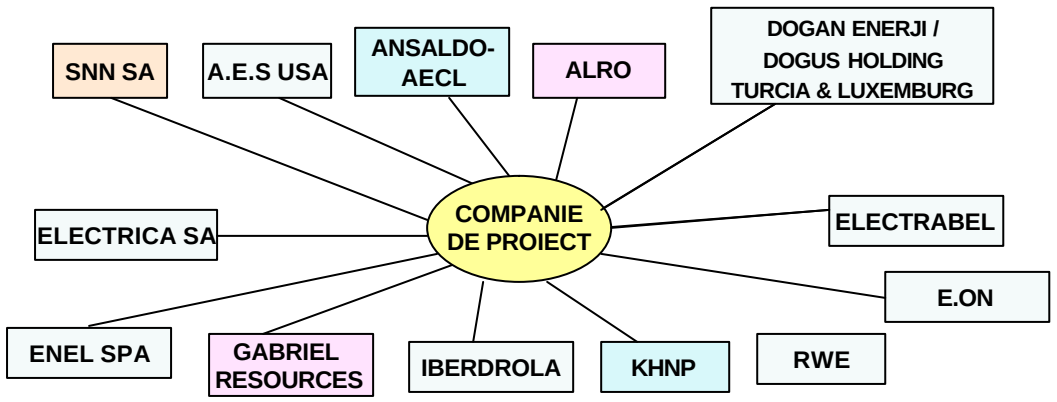
ADVANTAGES OF SELECTED MODEL FOR CERNAVODA UNIT 3 AND 4

5. Project implementation risks will be managed by the structure created by the private investors, without the contribution of the Romanian State.
6. SNN will have the role of commercial operator of Cernavoda Units 3 and 4, thus using its good practices and experience. The operation and maintenance contract for Cernavoda Unit 3 and 4 will lead to additional income, besides the benefits of the shareholder position.
7. The actual SNN's debts resulting fron Cernavoda Unit 2 loans (due in the next 10-15 years) will have a very limited impact over the project success.

FUTURE PARTICIPATION OF PRIVATE INVESTORS

- The shares of the PCO is assumed to be held by an experienced, financially strong and internationally recognised player in the electricity industry whose motivation for investing in the Project is to secure access to sources of power.
- Feedback from potential stakeholders indicates that Government's involvement will likely be required in the following major areas:
  - Discriminatory changes in law,
  - Force majeure,
  - Nuclear incident,
  - Operational risk not covered by traditional insurance policies,
  - Management of nuclear waste and decommissioning.

CERNAVODA UNIT 3 AND 4
FUTURE PROJECT COMPANY STRUCTURE



FUTURE STEPS FOR PRIVATE INVESTORS PARTICIPATION

- **The formation of the sponsor group may involve the following steps, planned to be performed by end of March 2007:**
  - **Binding offers to be requested from pre-qualified potential investors;**
  - **Preferred potential investors to be selected, with which negotiations to be commenced, and**
  - **Sponsors' agreement is to be executed.**
- **Once the sponsor agreement is executed the process to conclude agreements with the other key stakeholders such as financiers and contractors should commence.**
- **The ultimate goal is to set-up the commercial and financial frame of the project and start works earliest at the beginning of 2008.**

CONCLUSIONS

- The Government of Romania is continuing its policy to support nuclear energy as part of the sustainable development of the country.
- Romania developed the national infrastructure for development, management and supervision of the nuclear facilities.
- The nuclear power will reduce the Romania's dependence on external suppliers of primary resources.
- Cernavoda NPP is a real necessity for Romania and it contributes to increase the security of supply.
- The implementation of Romanian Nuclear Power Program represents an excellent example of cooperation with partners from Europe and the entire world