The Condition and Prospects of Nuclear Industry Development in Russia
Rosenergoatom - operating organization of Russian NPP’s

- 10 NPP’s and technical support organizations

- 31 units (5 NPP’s with VVER-440 and -1000, 3 NPP’s with RBMK-1000, 1 NPP with fast breeder и 1 NPP with small capacity channel-type reactors)

- Electricity generation in 2005: 147, 6 bln.kWh:
  - 15,6 % over Russia
  - 21 % European part (incl. Ural)
10 NPPs in operation with total power – 23,2 GW (31 power units), 5 power units – under construction.

Electricity generation at NPP – 147,6 TW-hr, 3,2% more than in 2004.

NPP share in electricity generation – 15,6%; in European part – 21% (together with Ural)
Main Indicators of NPP Performance in Russia
NPP Output in Russia in 1992-2010
Forecast of 12.12.05 for 2007-2010

Main Indicators of NPP Performance in Russia

Fact
Forecast

- In 2004 3 KLN connected to the grid
- 2 VLD planned into operation
- 4 KLN, 5 BAL planned into operation

1992-2010


milliard KW-hr

180
150
120
90

19,6 19,2
97,9 99,3
103,5
108,8 108,3
120,0
128,9
134,9
143,0
147,6
150,9
155,7
157,7

Forecast
Fact
NPP Capacity Factor in Russia in 1992-2010
(Forecast of 12.12.05 for 2007-2010)

Main Indicators of NPP Performance in Russia
NPP Operation Events in Russia in 1992-2005

In 1998 new standards of

Main Indicators of NPP Performance in Russia
Prospects
## Guidelines on Prospective Development of Nuclear Industry in Russia

| Initiative of RF President at the Summit of Millennium in U.N.O in 2000 |
| The Strategy of Nuclear Industry Development in Russia in the First Half of XXI century, 2000 |
| Concept of the Federal Program “Development of Nuclear Industry in Russia in 2007-2010 up to 2015” |
The Energy Strategy of Russia
Scenario for Electricity Production Development

Power Engineering
- 2% a year growth

NPP
- 4% a year growth

* Taking into account development of energy market of nuclear, thermal-nuclear, hydro-nuclear etc. plants

NPP energy share in Russia /including European part

- 2000: 15%
- 2005: 16%
- 2010: 19%
- 2015: 22%
- 2020: ≈23%

- Optimistic
- Moderate
Main challenges of “Rosenergoatom”

Safe and reliable generation of electricity including increase of generating capacities:

► Maintaining routine operation

► Upgrading and life time extension of existing units

► Construction of new units

► Guaranteed fuel supply and waste treatment
Life Extension of NPP Power Units in Russia
Scenario for Generating Facilities Withdrawal at Russian NPPs

- **2 112 milliard KW-hr**
- **10 NPPs, 31 units – 23 242 MW**
  - including **12 units of 1 generation - 5 752 MW**
- **Life extension for 15 yrs**
- **31,3 milliard KW-hr**
- **1390 milliard KW-hr**
- **Operation during 30 year period**

The diagram illustrates the total energy production and life extension scenarios for Russian nuclear power plants over a 30-year period.
Modernization and Life Extension of NPPs in Russia

Затраты

<table>
<thead>
<tr>
<th>Год</th>
<th>Удельная стоимость (тыс. руб.)</th>
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<tbody>
<tr>
<td>2001</td>
<td>1180</td>
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<tr>
<td>2002</td>
<td>2620</td>
</tr>
<tr>
<td>2003</td>
<td>3384</td>
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<tr>
<td>2004</td>
<td>4396</td>
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<tr>
<td>2005</td>
<td>5408</td>
</tr>
<tr>
<td>2006</td>
<td>6610</td>
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</tbody>
</table>

Примечания:
- 1KUR + 4BIL
- 2LEN + 3BIL
- 2KOL + 1,2BIL + 300 MW 3KUR
- + 1LEN + 1KOL
- + 1KUR + 3NVO + 300 MW 1KUR
- + 4NVO + 1KUR
- + 1KOL
- + 3NVO
- + 2LEN
- + 3BIL
- + 2KOL
- + 1,2BIL
- + 300 MW 2KUR
- + 1KUR
- + 3NVO
- + 300 MW 1KUR
- + 4NVO
- + 1KUR
- + 4BIL
Construction of new units
The Energy Strategy of Russia

The Forecast of Demand for New Facilities in European Part of Russia

- Total generating facilities growth
- NPP units growth (about 50%)
Stages of increasing the share of nuclear generation

- Commissioning of 2 GW/year since 2012
- Commissioning of 3 GW/year since 2014
- Commissioning of 4 GW/year since 2020
The Program of Nuclear Industry Development in RF
Long-term Sites for NPP Power Units with 2GW/year Growth Rate over Energy Regions
### Perspective projects in nuclear power

<table>
<thead>
<tr>
<th>Technology</th>
<th>Purpose</th>
<th>Period of commissioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>VVER-1000, VVER-1500</td>
<td>Provide capacities reproduction and development in European part of Russia</td>
<td>Till 2070</td>
</tr>
<tr>
<td>BN, BREST, SVBR and others</td>
<td>Transition to qualitatively new level of reproduction (renovation) and development of NPP capacities in terms of safety and ecology, fuel utilization and SNF and radwaste management</td>
<td>After 2010</td>
</tr>
<tr>
<td>Nuclear cogeneration plant (BK-300, VBER-300 and others)</td>
<td>Combination of electric energy and heat production for Russian regions</td>
<td></td>
</tr>
</tbody>
</table>
The national goal to achieve fast economical growth and double GNP by 2010 (double the amount of the consumed energy along with necessity to replace the aging capacities of conventional power generating industry).

Economical, social and environmental conditions drive us to development of nuclear industry and we demonstrate it.

Together via development and safe operation of nuclear industry to energy safety and stability over the world.
Thank you for your attention