Tokyo, August 27, 2008

NATIONAL AGENCY OF NATURAL RESOURCES

NICKEL IN ALBANIA

Tokyo, August 27, 2008
The nickel ore in Albania is located mainly in 3 regions:

1. Devoll (Bilisht, Bitincke, etc.)
2. Pogradec-Librazhd (Guri Kuq, Çervenake, etc.), (Prrenjas, Skroske, Xixillas, Bushtrice)
3. Kukes (Mamez, Trull Surroj, Nome)

The nickel is in form of iron-nickel (Pogradec, Librazhd) of a degrees of 0.8-1.1% Ni and in form of nickel-silicate (Devoll, Kukes) of a degrees of 1.1–1.4% Ni.
There are 25 mining permits in nickel activity, from which:

- Devolli region: 10
- Pogradeci region: 8
- Kukes region: 3
- Librazhd region: 4

Nickel production 2007: 353 800 tons
Nickel export production 2007: 353 800 tons
NICKEL EXPLOITATION PERMITS IN EACH REGION

- Kukes: 10
- Librazhd: 3
- Pogradec: 4
- Devoll: 8

Legend:
- Kukes
- Librazhd
- Pogradec
- Devoll
Nickel ore production during 1948-2007
BILISHTI REGION

- It is located about 20 km far from Korca town.
- The region has four deposits: Bitinckka, Kokogllava, Strana, Kapshtica, which are in continuity of each other and are extended in about 60 km².
- Fe-Ni body is situated over Ni-Si body. The ceiling rocks are carbonate, while in floor ultrabasic rocks.
BITINCKA MINE

- Bitincka, is extended in a space of about 20 km².
- Bitincka Mine was opened in 1982 has been in activity up to 1992. It have been produced about 750 000 tons.
- Proved reserves of two types of ore are about 37 million tons, with nickel content 1.63 %.
- The selective mining is an important task to be studied and carried out by mining specialists.
- It is given by mining license in 2001.
- The treatment ways are enrichment by screening and pirometallurgy.
CROSS SECTION OF BITINCKA DEPOSIT
• The reserves of Fe-Ni are about 21 million tons, with content: 1.03% Ni, 40% Fe, 9.6% SiO₂ and 0.04% Co. Only 2% of reserves are exploited up to now.

• The reserves of Ni-Si are about 16 million tons, with content: 1.21% Ni, 15% Fe, 35% SiO₂ and 0.04% Co. These reserves are not exploited up to now.
OPENING OF BITINCKA MINE
Deposit of Kokogllava is located about 1 km far of Bilishti.

The mine has a strike 1 km in the direction south-north and 0.8 km in the dip of west-east direction of Kokogllava deposit.

Ratio Ni-Si ore with Fe-Ni ore is 4 to 3. The bodies are located over each other with inclination 10 to 30 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling, while in its floor is situated Ni-Si body, its contact with ultra basic rocks is chemical.

In fact, it could be considered the continuation in depth of Bitincka deposit.
The reserves of Fe-Ni are about 15.3 million tons with content: 1.13% Ni, 43% Fe, 10% SiO₂ and 0.08% Co. These reserves are not exploited up to now.

The reserves of Ni-Si are about 16.4 million tons with contents: 1.32% Ni, 15% Fe, 37% SiO₂ and 0.042% Co. These reserves are not exploited up to now.
STRANA DEPOSIT

- It is located about 2 km in the east of Bilishti town.
- Deposit has a strike about 1 km in the south-north direction and 0.2 km in dip west-east direction.
- Ratio Ni-Si ore with Fe-Ni ore is 3 to 1. The bodies are located over each other with inclination 10 to 30 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling, while in its floor is situated Ni-Si body, which is separated from ultrabasic rocks with chemical boundary.
- Strana deposit is situated 750-1000 m over level sea.
The reserves of Fe-Ni are about 3.3 million tons with content: 1.11% Ni, 44% Fe, 10% SiO₂ and 0.05% Co. These reserves are not exploited up to now.

The reserves of Ni-Si are about 3 million tons with content: 1.27% Ni, 13% Fe, 38% SiO₂ and 0.039% Co. These reserves are not exploited up to now.
KAPSHTICA DEPOSIT

- It is located about 3 km in the east of Bilishti town.
- The deposit has a strike about 1 km in the south-north direction and 1 km in dip west-east direction.
- Ratio Ni-Si ore with Fe-Ni ore is 3 to 2. The bodies are located over each other with inclination 10 to 35 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
- Kapshtica deposit is situated 550-950 m over sea level.
GEOLOGICAL RESERVES OF KAPSHTICA DEPOSIT

- The reserves of Fe-Ni are about 19.7 million tons with content: 1.25% Ni, 43% Fe, 10% SiO₂ and 0.04% Co. These reserves are not exploited up to now.

- The reserves of Ni-Si are about 14 million tons with content: 1.21% Ni, 19% Fe, 30% SiO₂ and 0.04% Co. These reserves are not exploited up to now.
## Nickel Mineral Reserves According to the Regions

<table>
<thead>
<tr>
<th>No.</th>
<th>Region</th>
<th>Quantity 000/ton</th>
<th>Fe%</th>
<th>Ni %</th>
<th>SiO₂%</th>
<th>Co %</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Devolli</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Total Ni-Si</td>
<td>52 179</td>
<td>16.60</td>
<td>1.20</td>
<td>35.12</td>
<td>0.0397</td>
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<tr>
<td></td>
<td>Total Fe-Ni</td>
<td>59 193</td>
<td>38.66</td>
<td>1.074</td>
<td>12.2</td>
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<tr>
<td>2.</td>
<td>Kukësi</td>
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<tr>
<td></td>
<td>Total Ni-Si</td>
<td>29 221</td>
<td>21.73</td>
<td>1.057</td>
<td>40.12</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>Total Fe-Ni</td>
<td>65 504</td>
<td>37.22</td>
<td>1.029</td>
<td>26.93</td>
<td>0.0547</td>
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<tr>
<td>3.</td>
<td>Librazhd-Pogradec</td>
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<tr>
<td></td>
<td>Fe-Ni</td>
<td>105 592</td>
<td>44.72</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total Fe-Ni</td>
<td>230 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Ni-Si</td>
<td>81 400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
KUKESI REGION

- This region is located in the north of Albania, about 20-50 km south-west of Kukes town.
- The region has three mineral objects: Trull-Surroj, Mamez and Nome; The Trull-Surroj and Mamez deposit are closed to each other, meanwhile the Nome deposit is the most far from Kukes town (about 50 km). The deposits are extended in a considerable area.

**Type of ore deposit**

- The peculiarity of this mineralized zone is the availability of two types of mineralization, iron-nickel and nickel-silicate.
- The deposits have favorable technical-mining conditions to be exploited by open-pit mining.
TRULL SURROJ DEPOSIT

- Trull-Surroj deposit is situated in south-west of Kukesi town, about 30 km far from it. Relief is presented with hills and mountains with medium heights.

- The bodies are located over each other with inclination 10 to 30 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
GEOLOGICAL MAP OF TRULL SURROJ DEPOSIT
RESERVES OF TRULL-SURROJ DEPOSIT

- The reserves of Fe-Ni are about 5.1 million tons with content: 0.98% Ni, 34% Fe, 32% SiO₂ and 0.048% Co. These reserves are not exploited up to now.

- The reserves of Ni-Si are about 24.3 million tons with contents: 1.03% Ni, 22% Fe, 40% SiO₂ and 0.044% Co. These reserves are not exploited up to now.
MAMEZ DEPOSIT

- Mamez deposit is situated in south-west of Kukesi town, about 17 km far from it. Relief is presented with hills and mountains with medium heights.

- The bodies are located over each other with inclination 10 to 30 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
RESERVES OF MAMEZ DEPOSIT

- The reserves of Fe-Ni are about 19 million tons with content: 1.01% Ni, 36% Fe, 27% SiO$_2$ and 0.056% Co. These reserves are not exploited up to now.

- The reserves of Ni-Si are about 17.5 million tons with contents: 0.99% Ni, 19% Fe, 42% SiO$_2$ and 0.043% Co. These reserves are not exploited up to now.
Nome deposit is situated in south-west of Kukesi town, about 50 km far from it. Relief is presented with hills and mountains with mean heights.

The bodies are located over each other with inclination 10 to 30 degrees. Fe-Ni body is situated over and lime rocks are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.

Nome deposit is situated 1000-1250 m over level sea.
• The reserves of Fe-Ni are about 2.3 million tons with content: 0.85% Ni, 43% Fe, 13% SiO₂ and 0.047% Co. These reserves are not exploited up to now.

• The reserves of Ni-Si are about 4 million tons with contents: 1.198% Ni, 22% Fe, 41% SiO₂ and 0.046% Co. These reserves are not exploited up to now.
GURI KUQ DEPOSIT

- It is located close to the national road Prrenjas-Pogradec, about 3 km far from Pogradeci town.
- Relief is presented with hills and mountains with the height from 700 m up to 1250 m.
- Fe-Ni body is situated between the limestones and ultra basic rocks. The limestones are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
- The tectonic is very marked associated with different block separation.
- The mine started the activity in 1973 year, is closed in 2000 year.
- Actually, there is a private company which operates in this mine.
RESERVES OF GURI KUQ DEPOSIT

• The reserves of Fe-Ni are about 53.5 million tons with content: 0.97% Ni, 42% Fe, 17% SiO$_2$ and 0.075% Co.

Only 7% of reserves are exploited up to now.
OPENING OF GURI KUQ MINE
It is located close to the national road Librazhd-Prrenjas, about 0.5 km far from Prrenjas town.

Relief is presented with hills and mountains with the height from 300 m up to 900 m.

Fe-Ni body is situated between the limestones and ultra basic rocks. The limestones are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.

The tectonic is very marked associated with different block separation.

The mine started the activity in 1963 year, is closed in 1996-2000 years.

Actually, there is not any private company which operates in this mine.
The reserves of Fe-Ni are about 30.3 million tons, with content: 1.04% Ni, 47% Fe, 10% SiO₂ and 0.06% Co. Only 9% of reserves are exploited up to now.
OPENING OF PRRENJAS MINE
XIXILLAS DEPOSIT

- It is located close to the national road Elbasan-Korce, about 6 km far from Elbasan town.
- Relief is presented with hills and mountains with the height from 370 m up to 1337 m.
- Fe-Ni body is situated between the limestones and ultra basic rocks. The limestones are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
- The tectonic is very marked associated with different block separation.
- The mine started the activity in 1971 year, is closed in 2002 years.
- Actually, there is not any private company which operates in this mine.
The reserves of Fe-Ni are about 1.3 million tons, with contents: 1.02% Ni, 49% Fe, 5.4% SiO₂ and 0.068% Co. About 53% of reserves are exploited up to now.
OPENING OF XIXILLAS MINE
SKROSKA DEPOSIT

- It is located close to the national road Elbasan-Korce, about 14 km far from Elbasan town.
- Relief is presented with hills and mountains with the height from 600 m up to 1370 m.
- Fe-Ni body is situated between the limestones and ultra basic rocks. The limestones are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
- The tectonic is very marked associated with different block separation.
- The mine started the activity in 1985 year, is closed in 2002 years.
- Actually, there is a private company which operates in this mine.
• The reserves of Fe-Ni are about 21.8 million tons with contents: 0.99% Ni, 50% Fe, 4% SiO₂ and 0.065% Co. About 11% of reserves are exploited up to now.
BUSHTRICA DEPOSIT

- It is located close the national road Elbasan-Korce, about 3 km far from Elbasan town. The deposit is separated into two zones, central and west.
- Relief is presented with hills and mountains with the height from 370 m up to 1400 m.
- Fe-Ni body is situated between the limestones and ultra basic rocks. The limestones are in the ceiling with clear contact, while in its floor is situated Ni-Si body, which is separated from ultra basic rocks with chemical boundary.
- The tectonic is very marked associated with different block separation.
- The mine started the activity in 1963 year, is closed in 2000 years.
- Actually, there is not any private company which operates in this mine.
The reserves of Fe-Ni are about 2 million tons, with contents: 1.06% Ni, 49% Fe, 5% SiO₂ and 0.06% Co. About 49% of reserves are exploited up to now.
THANK YOU FOR YOUR ATTENTION

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