Vladyslav Sudoplatov
A.V. Yavorsky, research supervisor
V.V. Tykhonenko, language adviser
State HEI “National Mining University”, Dnipro, Ukraine

On the Problem of Shale Gas Mining in Ukraine

New sources of power resources are one of the most important and central tasks for the human. In these latter days all energy-dependent countries develop alternative technologies to produce renewable fuel: nuclear power, wind power, solar power, innovative approaches on the basis of genetically modified organisms etc.

It should be noted that no one of available technology for renewable fuel production can replace fossil energy resources even potentially. Shale gas is the only energy source having excellent qualities of substitute goods.

Shale gas is a variety of natural gas deposited in the form of small gas occurrences in a mass of shale seam of sedimentary rock. It is typical for shale deposits that they are available everywhere. Thus, in practice any energy-dependent country can provide itself with necessary energy resource.

World reserves of shale gas are almost 200trn cubic meters. However, only its small share may be extracted from bowels of the Earth.

Mining of new types of fossil fuels in Ukraine will help the state substitute those ones which deposits are depleted. Shale gas is that cheap alternative for natural gas and black coal.

Two large-scale deposits of shale gas are available at the territory of Ukraine. Yuzivka deposit is located in the east of the country within Luhansk, Donetsk, and Kharkiv regions. Total area of the deposit is more than 7000 square kilometers. Average occurrence depth of shale gas is 4000 meters. Effective thickness (that is total thickness of permeable gassy seams) is 30 meters. According to estimation by EIA, anticipated reserves are one to three trillion cubic meters of gas.

In the west of the country, Oles deposit is located. Its total area is more than 6000 square kilometers. The deposit is within Lviv and Ivano-Frankivsk regions. Anticipated reserves are one to two trillion cubic meters of gas.

Penetrating fluid method or frecking is applied to extract natural gas deposited within dense layers of oil shale. Peculiarity of the method is as follows: a mixture containing of water, sand, and large quantities of chemicals is pumped into a well. Water lifts a seam breaking it out. Then the water is pumped out. Through fissures and cavities resulting from the process, gas flows up freely.