

## ROCK SALT UNDERGROUND STORAGE

The use of natural massifs of rock salt as a medium for creating sealed underground gas and liquid storages has been considered to be a special issue in underground storage construction activities since 1950s. These efforts have totalled in extensive R&D work aimed to build a vast stock of underground liquid and gaseous hydrocarbons storages. But the rates that the total storage volume was growing in the USSR was lagging behind that in the majority of countries in the West, such as USA and Germany. This can be explained by little customers' commercial interest in creating large reserves of fuel and feedstock since the whole of hydrocarbon transmission and distribution in the country was state-controlled. Under the market environments, the value of these stabilising reserves, as potential profit sources, has been grown considerably and construction of underground storages has a good perspective. Geologically, the Russian territory (and other FSU republics) features virtually unlimited underground storage capacity: from western borders of the Ukraine and Russia to Irkutsk to the southern borders of Central Asian republics, there are about 30 salt-bearing basins and areas which are favourable for construction of storages using a geotechnological method, i.e. dissolving the rock salt through well drilling (Fig. 1).

Rock salt deposits differ in geological age (from Cambrian to Neogene), salt morphology, thickness and depth along with hydrogeological conditions, tectonic properties, mineral content, operating temperatures, etc. A number of basins such as Caspian, Volga-Urals, Pechora-Kama, Dneper-Don or Pripyat feature salt massifs in the form of domes, stocks, barriers, pools comprising large depressions with salt thickness being within hundreds metres or even exceeding 1,000 m. In other regions, e.g. Moscow, Dvina-Sukhon, Trans-Caucasian and the majority of Siberian basins, salt is present in beds and lenses whose thickness does not vary considerably - within the 60 - 80 m range. From the viewpoint of construction technology, the composition of salt deposits is an important issue. For example, a serious problem could be resulted from potassium salts which feature high dissolution speed such as in Pechora-Kama, pre-Carpathian and a number of other basins. The content of insoluble rock salt inclusions varies broadly even within a single deposit (Pechora-Kama, for example). Table 1 (source: V. A. Mazurov) gives an idea of variability of conditions within different rock salt deposits.