

NEUROSEISM: NEW APPROACH TO OIL EXPLORATION

GATIATULLIN N.S., TARASOV E.A., KULIKOV, S.A. Exploration Dept. of TatNeft Petroleum Co., Kazan, Russia.

For 56 years, oil exploitation in the Republic of Tatarstan, Russia, had mainly been focused on large fields. But nowadays smaller fields have also to be used for maintaining the Republic's economy.

Such smaller oil fields are possible to discover using neurocomputer technology of seismic data interpretation Neuroseism created by the Exploration Department of TatNeft Petroleum Co. The system is 'fed-and-taught' by seismic data from an area of proven oil presence to produce an oil forecast for an area under investigation.

Conventional seismic interpretation cannot take all noise reducing the forecast precision into consideration while the neurocomputer system uses 'images' of seismic signals and automatically takes much more noise into account. The main condition on which the system works is the use of geological information from an investigated area. Neuroseism produces an oil-and-gas-content forecast map using conventional geological and geophysical data.

In a first exploration stage, it is enough to have data from only one well that penetrated an oil reservoir. In order to get a more dependable forecast, it is important to have more well information as the exploration continues. This technology considerably reduces exploration expenses and makes an oil-and-gas forecast more reliable.