

## »»» GLOSSARY

### Exploration and production

**2D seismic survey** – study of strata formation using a system of sensors and explosive devices to obtain a two-dimensional strata model. In 2D exploration, sensors are placed along certain lines (sections) and the study is carried out along the depth of the section.

**3D seismic survey** – study of strata formation using a system of sensors and explosive devices to obtain a three-dimensional strata model. In 3D exploration, the sensors are placed over the surface of the relevant area. This is one of the most accurate geophysical techniques, but requires major IT resources and other equipment and expenses. Therefore oil & gas companies usually carry out 2D seismic in order to ascertain which zones are most deserving of 3D studies.

**Vertical seismic profiling (VSP)** – a seismic exploration method, which details structure of the space around the well, defines the nature of geological sections, which are penetrated, and provides a speed model of the environment and level of oil saturation in strata. VSP is carried out by creation of waves on the surface, which are captured in the well by seismic receptors placed at various depths, and by subsequent study of the results.

**Geo-electrics (electromagnetic exploration)** – a technique of finding mineral deposits by studying the earth's electromagnetic fields.

**Flow rate of a well** – quantity of hydrocarbons obtained from a well in a given period of time (usually one day).

**Watercut** – quantity of water in mixture extracted from an oil well (usually expressed as a percentage).

**Associated petroleum gas** – mixture of various gaseous hydrocarbons, dissolved in crude oil, which separate out in the production and refining processes (mainly consist of propane and butane). Associated petroleum gas can be used as a fuel and for production of various chemicals.

**Natural gas** – mixture of gaseous hydrocarbons, whose main component is methane. Natural gas is located in strata in a gaseous state, either as gas deposits or as a gas cap at oil & gas fields.

### Refining

**Refinery throughput** – volumes of oil despatched to drying and desalination facilities.

**Depth of refining** – ratio of crude oil volumes processed at primary refining facilities, excluding saleable heating oil, liquid fuel used in production, and losses in drying and desalination, to total crude oil volumes processed at primary refining facilities.

**Light products yield** – ratio of the total volume of gasoline, diesel fuel and their fractions (useable as motor oil components), jet fuel, illuminants and technical kerosene, low-viscosity ship fuel and heating oil (fractions, which vaporize between 28 and 360 degrees Celsius) to the total volume of oil processed at a refinery in a given period.

**Naphta** – straight-run gasoline, unstable gas naphta, secondary-process gasoline and hydrocarbon inputs for production of ethylene.

**Fuel oil** – fuel oil, ship fuel oil, oil residues and raw material for technical carbons.

**Lubricants** – oils, base oils, packaged oils, etc.

**LPG** – propane-butane used as vehicle fuel, technical propane, technical butane, technical propane-butane, isobutane.

**Compressed gas** – gas at pressures required for transportation along trunk pipelines.

**Stripped gas** – associated petroleum gas, containing ethane, propane and butane fractions, freed from gas naphtha components (C<sub>5</sub> and higher).

**Alcylation** – process for obtaining high-octane gasoline components by interaction of isobutane and olefin hydrocarbons.

**Visbreaking** – process for refining crude oil residues (tars and semi-tars) by shallow thermal decomposition. The main product of visbreaking is boiler fuel, which is obtained by lowering viscosity of the inputs through cracking.

**Gas fractionation** – obtaining separate light hydrocarbons or hydrocarbon fractions with higher degrees of purity from associated petroleum gas.

**Hydrocracking** – catalytic cracking by application of medium and high pressure gas with hydrogen content. Choice of catalysts and technical parameters makes it possible to obtain high-quality components for most petroleum products (liquefied gas, gasoline and diesel, oil components, etc.) from virtually any raw hydrocarbons by hydrocracking.

**Hydrotreating** – process for reducing sulfur and nitrogen elements in petroleum products using a catalyst under pressure from a gas containing hydrogen.

**Isomerization** – process for obtaining high-octane isoparaffin fractions by refining low-octane paraffin hydrocarbons from light gasoline fractions using catalysts.

**Catalytic cracking** – process for obtaining high-quality and stable gasoline by catalytic decomposition of heavy fractions into light fractions, carried out at high temperatures (500 degrees Celsius) using a catalyst.

**Catalytic reforming** – process for obtaining high-octane gasoline components and aromatic compounds by turning low-octane straight-run gasoline into high-aromatic gasoline fractions with use of a catalyst.

**Coking** – thermal process for decomposing heavy and compact residual products into lighter products (gasoil and naphtha) and petroleum coke.

**Pyrolysis** – high-temperature process of deep thermal refining of petroleum products and/or gas to obtain inputs for petrochemical synthesis. The main product of pyrolysis is gas rich in unsaturated hydrocarbons (ethylene, propylene, butadiene).

**Thermal cracking** – process for obtaining light hydrocarbons from heavier hydrocarbons at high temperatures (for example, vacuum gasoil can be refined into light products).

## »»» REFERENCE INFORMATION

More information about the Company is available at LUKOIL's website at [www.lukoil.com](http://www.lukoil.com) (English version) or [www.lukoil.ru](http://www.lukoil.ru) (Russian version).

By visiting our site you can find out more about LUKOIL's main businesses and Company results, as well as staying informed about new developments in all spheres of LUKOIL's activities. The site also provides information about Company policy and involvement in social and environmental affairs.

A section of the site for investors and shareholders provides the Company's financial results, history of dividend payments, share prices and accounts. A number of presentations for the investment community are also available through this section of the site.

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### LUKOIL Publications

Electronic versions of the following reports are available on the Company web site ([www.lukoil.com](http://www.lukoil.com))

1. Annual Report.
2. Consolidated Financial Accounts.
3. Quarterly Consolidated Financial Accounts.
4. Management Discussion of Company Performance.

**All information in this document is presented as of 31.12.2009. This document does not reflect any changes that happened after that date, unless specified.**

### Concepts and Terms Used in the Document

The references to LUKOIL, LUKOIL Group, 'the Company', 'we' and 'our' in this document all refer to LUKOIL and/or its subsidiary enterprises, depending upon the context, in which the terms are used.

### Sources of information

- Information provided by the Ministry of Industry and Energy of Russia
- Information provided by the State Committee for Statistics of the Russian Federation
- Annual reports of major international private oil companies
- Statistical Review of World Energy 2009 (British Petroleum)
- Annual Statistical Bulletin (OPEC)
- Worldwide Refineries-Capacities as of January 1, 2010 (Oil & Gas Journal)
- Platt's

### Abbreviations

\$ or USD — United States Dollars

boe — barrel of oil equivalent (1 boe = 6,000 cubic feet of gas)