

## Study of global best practice

In 2017 a meeting was held between LUKOIL specialists and the specialists of leading oil and gas companies and engineering centers in China and the USA to study the equipment used in offshore production and repair technologies of underwater

pipelines, and also methods to increase the reliability of upstream pipeline operations in harmful environmental conditions. Based on the results of visits and existing technical and regulatory documentation on the operation of oil and gas field equipment and

pipelines, a new corporate standard on corrosion protection was drafted<sup>1</sup>, with implementation expected to begin at LUKOIL-Komi. After testing, the standard will be applied at all the Company's oil production subsidiaries.

## Participation in the legislative process

LUKOIL professionals play a proactive role in the drafting of Russian federal legislation regulating the safe operation of pipelines: in 2017 work was performed to draft federal norms and rules on the safe operation of in-field

pipelines, as well as to draft national standard on the protective coating of the internal surface of pipes used in the oil industry. Standardization of respective requirements will enable all Russian companies to determine more

accurately the coatings that are most effective for use in different conditions, thus increasing the level of industrial and environmental safety and reducing the number of oil spills throughout the country.

## Use of unmanned technologies

We are looking at the experience in applying new technologies, such as drones, including for the purpose of monitoring the integrity of pipelines and rapidly responding to unauthorized actions from third parties. The Research

and Technology Board of LUKOIL is assessing various technologies that could be used at the Company's facilities. Aerial vehicles from different manufacturers are being tested at LUKOIL Group subsidiary sites in order to

determine their potential value and use. Based on the test results there are plans to adopt a decision on the expedience of using them, and the terms governing their practical use.

## Oil spills

In 2017 the total amount of oil and petroleum products spilled dropped by 13.6% in comparison with 2016, despite the fact that the number of accidents affecting the environment rose.

Based on 2016 data, LUKOIL's indicator for oil spilled was low compared to other oil and gas companies<sup>2</sup>. In 2017, the Group's overall dynamics improved.

tie-in into a pipeline in West Siberia, all other incidents combined accounted for 5.7% of the total volume of oil spilled.

Apart from one large spill, which occurred as a result of an unauthorized

In 2017, two incidents resulted in environmental damage and oil being spilled into water bodies.

## VOLUME OF OIL AND PETROLEUM PRODUCTS SPILLED DURING INCIDENTS

	2016	2017
Volume of oil and petroleum products spilled during incidents, thousand tonnes	0.26	0.22
Specific spills rate (kg of oil and petroleum products spilled per thousand tonnes of oil and gas condensate extracted)	3.1	2.7

Note: The specific factor is calculated on the basis of the volume of oil and gas condensate production in Russia (excluding the share of dependent organizations).

<sup>1</sup> For example, LUKOIL-Komi Oil Field Pipelines of Regional Production Enterprises of LUKOIL-Komi. Corrosion Monitoring System, LUKOIL-Nizhnevzhskneft Repair of Offshore Pipelines technical regulation.

<sup>2</sup> According to the reports of the following companies: Rosneft (2016 Sustainability Report, page 57), BP (2016 Sustainability Report, page 8), Shell (2016 Sustainability Report, <http://reports.shell.com/sustainability-report/2016/data-and-reporting/environmental-data.html>).