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GAS WELL OPERATION: ANALYSIS OF NEGATIVE IMPACTS ON THE ENVIRONMENT

Oil and gas are important sources of energy. At the current stage of society's development, an integral indicator of the state's development is its attitude to environmental problems. Environmental problems in the gas and oil industry have their own specificity, which is mainly determined by the alienation and pollution of land in the areas of industrial exploitation of deposits and conducting geological prospecting.

Probable causes and ways of entry of pollutants into the natural environment are divided into technological and emergency.

Technological reasons include:

- non-observance of safety rules when working with fuels and lubricants, drilling and tamping solutions;
- pollution of underground water of drinking quality due to leakage of columns and poor-quality cementing;
- ruptures of pipelines, spills of fuel and lubricants;
- violations or poor-quality implementation of waterproofing of barns and technological sites;
- violation of requirements during loading, transportation and storage of chemical reagents for the preparation of drilling and tamping solutions;
- atmospheric air pollution during the operation of the drilling rig and combustion of well test products.

Accident causes include:

- gas and water detection and open fountains when drilling wells;
- emergency situations and violations of well test technology.

The ecological balance of the natural environment is connected with geological exploration and extraction of all types of minerals. The complex of geological exploration works includes such stages as geological surveying and prospecting, preliminary and detailed exploration with the implementation of mining (trenches, pits, tunnels with the use of explosives and special equipment) and drilling works, arrangement of energy and related facilities. At all stages, geophysical exploration methods are used with a complex of other types of work (road clearing, blasting, etc.). The main reasons for the deterioration of the natural environment during the development of oil and gas fields are:

- cases of open releases of oil, gas, formation water are possible during the opening of productive formations;
- contamination of surface and underground waters with liquid hydrocarbons;
- gasification of atmospheric air during operation of gas fields and gas storages.

The influence of geological exploration works is carried out on:

- soil - there is compaction of the soil, deterioration of the physical-mechanical and chemical-biological properties of the soil layer, pollution, disturbance of the soil cover;
- geological environment - alienation and pollution of land, damage to the microrelief, generation of waste, etc.;
- atmospheric air – change in the composition and properties of the atmosphere, air heating, air pollution;

- water environment – pollution, acidification, salinization of water, change in groundwater quality.

The reasons for the disturbance of the natural environment are emissions during drilling and development of wells, violation of the tightness of the column, gusts of the pipelines of the drilling site.

All stages of extraction, preparation, transportation of hydrocarbon products are dangerous due to their fire and explosion hazard.

The impact of drilling and operation of the well is carried out on:

- soil – soil compaction, reduction of humus content, pollution, deterioration of its physical, mechanical and chemical-biological properties;

- geological environment - alienation and pollution of land, violation of natural relief forms, withdrawal of land from agricultural turnover, etc.

- plant and animal life – deforestation, change in the quantity and species composition of animals and plants, pollution, disruption of the natural ecological balance;

atmospheric air – pollution by emissions from the engines of drilling rigs, changes in the composition and properties of the atmosphere, air heating;

- water environment – reduction of ground water reserves, pollution, acidification, salinization of water, changes in the composition and properties of ground and underground water, pollution with spent solutions;

- population and personnel – noise and vibration pollution, use of toxic chemicals, generation of waste, pollution of atmospheric air, water, soil.

Violations of the natural environment during geological exploration, drilling and operation of wells are caused by a whole complex of factors of the technological process, therefore the main task of environmental protection should be to minimize undesirable consequences and rational use of natural conditions.

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