INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 4, Issue 4 April 2023

OIL AND GAS TREATMENT IN OIL AND GAS FIELDS

Abdullaeva Shokhista Shukhratovna
Teacher of the Bukhara Engineering and Technology Institute

Abstract:
This article studied the preparation of oil and gas in oil and gas fields. The development of a gas condensate field is given, the successive change of several characteristic periods: development and trial operation.

Keywords: gas, oil, oil and gas condensate fields, gas condensate field, pressure, hydrocarbon, component, condensate, wells.

In domestic gas field practice, the development of gas condensate fields is carried out mainly in the mode of using only the natural energy of the reservoir. Gas condensate deposits in their initial state are characterized by high formation pressures. Such a regime requires minimal capital investments and relatively moderate current material and financial costs for its implementation.

In the history of the development of a gas condensate field, there is a successive change of several characteristic periods: development and trial operation; increasing, maximum, falling production; final period. In contrast to the development of a purely gas deposit, in this case one has to deal with products that are constantly changing their composition. This is due to the phenomena of retrograde condensation of the reservoir hydrocarbon mixture with a decrease in reservoir pressure. The high-molecular hydrocarbon components of the mixture, after the pressure in the deposit is reduced below the pressure of the start of condensation, pass into the liquid phase, which remains stationary almost throughout the development of the field due to the low phase saturation, which is much lower than the threshold of hydrodynamic mobility. .[1]

An increase in the coefficient of condensate recovery and gas recovery in the development of gas condensate fields can be achieved by returning to the reservoir during a certain period of time the produced gas, from which the hydrocarbon condensate has been previously extracted.

ISSN: 2776-0987 Volume 4, Issue 4 April 2023

The development mode, which ensures the extraction of reservoir gas with an initial high or decreasing condensate content (due to pressure maintenance), is called the cycling process. In the Republic of Uzbekistan, it was first used at the Kokdumalak field , which is equipped according to the full scheme for the development of oil and gas condensate fields using the " cycling process" and waterflooding in order to maintain reservoir pressure in the deposit.

Currently, the South Kemachi field is being developed using the " cycling process" . At present, deposits such as Zevardy , Alan, Kultak , Pamuk , Shurtan and Sharkiy Berdak is already operating in declining production and is approaching production at a late stage of development. These stages of development of the main exploited fields of the industry are characterized by the following points: a drop in reservoir pressure and a corresponding decrease in well production; ongoing flooding of the operating well stock and aging of the well stock and onshore gas production facilities; well plumes stop working in the mode of constant removal of the liquid phase; pressure drop leads to a number of serious technological problems in the operation of field treatment plants and the emergence of difficulties in ensuring the proper quality of commercial gas.

During the period of declining production, one of the main factors determining the energy intensity of gas production is the efficiency of work within the field transport system, since additional pressure losses in it lead to an increase in energy consumption for gas compression.

In gas condensate fields for gas treatment, low-temperature separation using a choke effect is currently recommended as the main process to obtain cold in the initial stage of field operation and turbo-expanders or refrigeration units at the stage of declining production. With an appropriate feasibility study, the above technologies can be supplemented with other low-temperature processes. .[2]

For example, at the Kokdumalak , Zevardy and Pamuk gas condensate fields, the treatment of natural gas at the GTP (the operation of which for the first 12–25 years was carried out using the method of low-temperature separation using the Joule-Thomson effect) is currently carried out using turbo-expanders, due to the possibility of obtaining the required degree of cooling gas at lower pressure drops.

INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 4, Issue 4 April 2023

When using TDA, it becomes possible to implement a technological scheme for gas drying using the existing equipment of NTS units (separators of the first and second stages, recuperative heat exchangers of the first and second stages, low-temperature separators) and thereby extend their service life. The introduction of TDA into the technological scheme of gas dehydration makes it possible to ensure the operation of existing NTS installations at a lower inlet pressure - 7.5 MPa .

The use of TDA makes it possible, at a lower pressure drop (2.0 MPa) at the NTS unit, to achieve the quality of gas treatment similar to throttling (4.2–4.4 MPa), while ensuring the required dew point temperature for moisture and hydrocarbons.

Such an approach, both from the point of view of the rational use of reservoir energy, and from the point of view of the economic efficiency of the operation of NTS units, is justified and leads to a reduction in capital costs at the stage of additional development of the field.

By reducing the pressure at the inlet of existing LTS gas installations to 7.5 MPa, the reliability of the operation of pipelines and process equipment designed for a pressure of 10.0 MPa increases , the productivity of the BCS also increases, and the time for compressor modernization is postponed.[6]

The main problems in the operation of gas treatment units at the final stage of field development are an increase in the specific moisture content of the gas supplied for treatment and the total moisture load on the unit, an increase in mass and linear velocities in the apparatus, linear velocities and hydraulic resistances in regeneration (adsorption) schemes and other problems.

To optimize gas production and treatment throughout the entire period of field development as a single whole, it is necessary to develop an algorithm for solving the problem, where the main thing is the choice of universal models for all links of the reservoir-gas pipeline-gas treatment plant system with linking the calculated parameters, i.e. models whose output data of the previous model correspond to the input parameters of the next one, and the databases and the main equations of the models do not contradict each other.

ISSN: 2776-0987 Volume 4, Issue 4 April 2023

References:

1. Хафизов, А.Р., Пестрецов Н.В., Чеботарев В.В. и др. Сбор, подготовка и хранение нефти. Технология и оборудование. Учебное пособие. Уфа. 2002.
2. Ямалетдинова, А. А., & Абдуллаева, Ш. Ш. (2016). Физико-химические основы процесса подготовки нефти на месторождении Кокдумалак. Наука, техника и образование, (2 (20)), 58-61.
3. Shukhratovna, A. G., & Shukhratovna, A. S. (2023). DISTANCE EDUCATION PERSPECTIVES AND INNOVATIONS. Journal of new century innovations, 21(2), 97-99.
4. Ямалетдинова, А. А., & Абдуллаева, Ш. Ш. (2015). Минерализация пластовых вод, выделенных из местных водонефтяных эмульсий. Молодой ученый, (12), 361-363.
5. Abdullayeva, S. S., & Boltayev, A. S. O. G. L. (2023). Uzun yurishli nasos qurilmasini anomal xossali neftni qazib olish uchun qo'llash istiqbollari. Science and Education, 4(3), 217-222.
6. Ямалетдинова, А. А., & Абдуллаева, Ш. Ш. (2016). Подготовка нефти и газа на нефтегазовых месторождениях в период падающей добычи. Молодой ученый, (2), 282-285.
7. Абдуллаева, Ш. Ш. (2016). Экологические проблемы нефтегазовых комплексов. Научный аспект, (4), 179-181.