GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ)
ISSN (E): 2347-6915
Vol. 9, Issue 6, June (2021)

# IMPROVING THE TECHNOLOGICAL QUALITY OF CEMENTING OF HORIZONTAL WELLS

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## ANNOTATION

The article discusses the technological processes of cementing horizontal wells, the factors affecting it, the technology for preparing a cement mixture and its implementation, the determination of water-cement ratios using plasticizers using the most effective method of controlling sedimentation strength and ozonizing ability.

**Keywords:** cementing, depression, plugging, aeration, buffer fluid, sedimentation, development.

## INTRODUCTION

The quality of casing cementing consists not only in reducing the level of productivity of the layer in it, but also in their reliable separation. High-quality and reliable separation of layers by cementing the columns is very important in the fields, since the aquifers in the shear layer are removed at a distance not exceeding the oil layer. In recent years, the development of low-productive fields and dewatering formations has become one of the most pressing problems.

When studying mining data, the geological structure of the productive area and the formation of large depressions in low-productive formations during the development and operation of wells, as well as the technological factors of the cementing process, have a significant impact on the factors of the wells.

Each area will develop its own specific guidelines for opening and reinforcing the layers to improve the quality of the cementation, with particular emphasis on floating joints.

These guidelines should consider the following:

- use of drilling fluids with minimum parameters and water permeability;
-use of buffer fluids;
-Ensure the contact of the cement stone with the column and the rock;
-High-quality separation according to the results of measurements with the help of AKTs-1, assessment of the density of the cement stone;
-controlled pressure on the formation during drawdown and cementing during the development and operation of wells;
- Carrying out and renewal of special insulation works.

Tests of weak cement slurry compositions were carried out in an industrial environment. At the Kopey-Kubovsky site in Bashkortostan, the reduced density during cementing of the production column is 1.5 g / cm$^3$ and a mixture of cement (5%) with a plastic microballoon joint. In Dagestan, a cement mixture with a density of 1.13 g / cm$^3$ was used in the wells of the Shamkhal-Bulak area. Waste polyethylene was used as an emollient. Cementing results are positive [1,2].

The density of the cement mixture using foam at a hydrostatic pressure of 30-80% of the formation pressure during the opening of a productive pile did not exceed 0.4-0.9 g / cm$^3$. For this, foaming conductive solutions were used.

The degree of aeration is selected from the condition of obtaining a column of a buffer mixture of medium density, which makes it possible to easily raise it to the height of the project.

The required aeration rate is achieved by selecting the ratio of the liquid and gas phases, depending on the available technical means. Aeration is carried out by a high-pressure compressor or a set of compressors for an ejector-aerator drilling rig. A hydroactivator is attached to the manifold block or to the block; after the manifold block, a flow mixer-disperser is placed on the drive line. The transfer of the foaming agent is carried out into the manofold unit through the hydroactivator of the cementing unit.

Control of the main parameters of the gas suspension:

- the foaming frequency must be greater than or equal to 3;
-strength - the ratio of the volume of the cement stone to the volume of the aerated buffer mixture should be equal to 1 or 100%;
- readability about 14 cm;
- the density of the aeration liquid is not more than 0.2 g / cm$^3$;
- the curing time of other reagents found in the foaming composition and not subjected to forced aeration (20 minutes are added to the obtained curing time and correction, which slows down the aeration effect).

In the process of cementing wells with a gas-filled buffer material, three-phase foam systems of the solid-phase composition of Portland cement are added as a buffer fluid. Such a system performs the main function of the buffer fluid in general - it prevents mixing of detergents and cement mixture.

The recommended range of the cement mixture for obtaining a stable buffer fluid is 20-35% [4]. This system tends to participate in the formation of a new structure and moving systems with components of the flushing fluid and a turbid shell with a turbid space, and also has a free reserve fluid. When a compound is added to the spacer fluid, which renders it reactive when in contact with the clay shell, it acts as a separator and allows the clay shell to decompose and be removed from the cementing zone.

The time for complete disintegration of the filtrate shell with a thickness of 3 mm of the chemical composition of the active buffer liquid is usually from 1 to 5 minutes (depending on the concentration of the component of the used ingredient). The components of this fluid are non-corrosive - active and produced on a large scale. The buffer liquid is used in volumes from 3 m$^3$ to 6 m$^3$.

The physical properties of the fluid produced from the gas condensate well (low viscosity, low density) are likely to lead to the formation of a reinforced channel in the backspace of the pipe while waiting for the cement mixture to solidify.

To prevent such complications, a well cementing technology has been developed, which ensures the tightness of the cement ring behind the well casing, which sets the sequence of operations when selecting a plug mixture set by geological conditions.

- in the choice of control actions to predict the tightness of the cement ring under technical conditions and to prevent the occurrence behind the casing and crossflows between layers.

The most important element of this technology is to predict the order of the tightness of the cement ring by traditional parameters using computer programs.

This includes the possibility of forming sedimentation channels in the back space of the casing along the wellbore, changing the porosity of the buffer mixture during the CCM (solidification of the cement mixture), liquid coming out to the ground through the annulus of the casing, Added account for the influx of foreign fluids into the perforated zone.

Using these calculations, the quantitative requirements for the characteristics of the buffer mixture and stone are propelled in a reasonable target direction, eliminating sedimentation under the conditions under the column and reducing the likelihood of formation of formation fluids downstream of the column.

Based on the results of the analysis of the technical and economic indicators of operating wells and the remainder of the calendar test time, they were determined one year after the completion of their drilling, the average test time for one well was in the range of 10-17 days.

The development of underground repair works took a long time. In this case, the working time is 30%, i.e. 5.5 days, overtime work - 70%, i.e. 12.6 days, days of waiting for testing - 22% (4 days), standing - 44% (8 days), the rest of the time. was spent by 3-4% (0.6 days) - to eliminate accidents and complications [5,6].

Thus, it can be seen from the data that the time spent on well testing (perforation, unloading and lifting operations, collection of inflow, exploration of wells and auxiliary work) was 5-6 days.

The same situation is observed in many production associations: Nizhnevartovneftegaz, Surgutneftegaz, Noyabrskneftegaz, Tomskneft, Bashneft, Permneft, Orenburgneft, Udmurtneft, Stavropol, Mangyshlakneft, Uzbekneft, etc.

After the completion of drilling, the issues of well development and workover will be addressed in two ways to improve the efficiency of work:

- Improving the organization of work in order to reduce the production time (65 - 75%);
-development of new progressive technical means and technological processes.

Re-opening of oil reservoirs, reinforced with a column, in practice is carried out through the use of cumulative perforators (more than 98%). The use of other types of perforation (water-sand, axial) is used less often due to the complexity of the process (water-sand-flow), less effective (axial perforation) and due to the deterioration of the strength of the well (torpedo perforation) [7].

Based on the analysis of the materials of the secondary opening of the layer, the following conclusions can be drawn:

The equipment produced in Russia lags behind the existing one in terms of the number of standard sizes of perforators, especially of small diameters, discharged through tubing.

Perforation during primary drilling and after secondary drilling can adversely affect the wellbore area during the formation of communication channels when filling the well environment.

Research shows that the main reason for the reduction in reservoir permeability is that the borehole wall channels are blocked by solids. The penetration of the filters from the perforated environment is not correct because, since there is no way to prevent the penetration of the filters, the manifold cannot be rendered unusable by changing the filtration characteristic.

Little attention has been paid to this issue lately. According to available data, perforation in the environment of special fluids in most mining organizations is 1.5-2% [8].

In the United States, perforated wells are widely used, while in other cases, specialty oil-based or water-based fluids that do not contain solids or acid-soluble compounds are widely used for finishing wells. The following inorganic salts are widely used as aggravating agents in well completion fluids: NaCl, $CaBr_2$, $CaCO_3$, $FeCO_3$, ZnBr. The amount of seam added is selected according to the specific conditions of the layer.

Cement units, pneumatic compressor stations U KP-80, KS-16/100, S D-9/101, gasified units of nitrogen vehicles AGU-8K are used as technical means for hydrotransport during well development.

The most important attention is paid to the development of sulfur deposits, where aggressive and toxic sulfur complicates the use of known and tested technologies or limits their application in general. If the mine has a high reservoir pressure, the problem of displacement in the reservoir will not be practiced (it is enough to replace the drilling fluid with a lighter fluid), there was no technology in the network for wells with an abnormally low and normal reservoir. pressure.

With the help of a special mechanism, the flexible pipes pass through the tubing under direct pressure through the lubricator. Nitrogen gas, special fluids and other agents are transported through the drum bubble through coiled tubing into the well. The installation is serviced by one operator.

Such a device is designed to perform many operations: cleaning sand plugs, lowering and increasing pressure by replacing one type of liquid with a liquid or gas of another type, etc. Work can be carried out under pressure up to 31 MPa. Such devices are not produced in Russia.

## CONCLUSION

After drilling oil and gas wells, it is important to perform quality cementing and commissioning without skin factor. The problems of using light cement mixtures for cementing wells and preventing filtrate from entering the reservoir channels have been studied. The most important element of this technology is the use of computer programs to predict the order of the tightness of the cement ring based on traditional indicators. The penetration of the filters from the perforated environment is not correct because, since there is no way to prevent the penetration of the filters, the manifold cannot be rendered unusable by changing the filtration characteristic. Little attention has been paid to this issue lately. It is shown that the technologies used in the USA and a number of other countries can be effectively used.

## LITERATURE

1) Барановский В.Д., Булатов А.И., Крылов В.И. Крепление и цементирование наклонных скважин. - М.: Недра, 1983. - С. 273.
2) Басарыгин Ю.М., Макаренко П.П., Мавромати В.Д. Ремонт газовых скважин. — М.: Недра, 1988.
3) Булатов А.И., Дейкин В.В. и др. Требования к физико-химическим характеристикам тампонажного камня в горизонталъных скважинах//Газовая промышленностъ. — 1997. — № 10. — С. 10—11
4) Буферные жидкости, исполъзуемые при цементировании скважин /А.И. Булатов, Р.Ф. Уханов и др. Обзор информ. Сер. Бурение. — ВНИИОЭНГ, 1987.

5) Басарыгин Ю.М., Будников В.Ф., Булатов А.И., Герасъкин В.Г. Строителъство наклонных и горизонталъных скважин. — М.: Недра, 2000.
6) Волков В.П., Галлямов К.К. и др. Анализ строителъства и эксплуатации ГҚ на Самотлорском месторождении//Нефтяное хозяйство. — 1997. — № 6. - С. 41-42.
7) Крепление скважин на месторождении Прибрежное / Ю.М. Басары- гин, В.Ф. Будников, С.А. Шаманов // Газовая промышленностъ. 2000. - № 2. - С. 42-43.
8) Опыт создания герметичного заколонного пространства скважин при строителъстве Кущевского ПХГ / Ю.М. Басарыгин, А.И. Булатов, G.А. Шаманов, и др. // Гипотезы. Поиск. Прогнозы: Сб. науч. тр. - Краснодар: Северо-Кавказское отд-ние РИА, 1999. - Вып. 7. - С. 71—81.