



FEATURES OF THE SECONDARY RESTRICTION PROCESS

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Received: 4 th April 2024 Accepted: 10 th May 2024	This article provides information about the features and requirements of secondary drilling of a productive formation, types of perforations used during secondary drilling, and their disadvantages

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INTRODUCTION

Secondary Drilling is the final stage of the process of drilling gas and oil wells. This process involves performing a set of actions that are aimed at developing a productive formation in order to obtain raw materials from discovered deposits. The autopsy is carried out strictly according to technology, with monitoring of effectiveness and strict safety control. The technologies used for opening oil-containing productive formations must meet the following basic requirements:

- preventing open flowing of a well under significant pressure;
- ensuring the reliability of the structure of the shaft, pipelines, and bottomhole zone;
- protection against loss of filtration parameters in the near-wellbore area when opening oil-containing productive formations with low pressure.

MAIN PART

During the secondary opening, perforators of different designs can be used. Thus, bullet-type devices are lowered into the barrel on an electric cable, and when a pulse of electricity is created, a so-called salvo is carried out, during which shots are fired along a radial trajectory. The diameter of the bullets is 1.25 cm, they are capable of penetrating a column with a ring and ending up in the productive layer. After this, channels appear, which can have a length from 6.5 to 15 cm, depending on the power of the equipment and the physicochemical properties of the formation.

Devices of a torpedo design are more effective: they fire explosive-type projectiles, their diameter ranges from 2.2 to 3.2 cm. When such projectiles explode, deep cavities are formed. The disadvantage of this and the

previous type of equipment is that after work, cracks may form in the pipes and ring of the cement mixture.

Application of cumulative devices: holes are formed in the formation, pipes and ring by burning the walls with a concentrated gas jet, which is formed during the explosion of cumulative type projectiles. The jet pressure reaches 30 GPa, and a channel up to 35 cm long is created in the rock, which has a structure tapering in length. Its maximum diameter is 1-1.5 cm. The disadvantage of the method is that the gas jet causes the supply of liquid from the barrel, which causes the formation to become clogged, and in the future, during operation, the oil inflow may decrease significantly.

The disadvantages that are typical for perforating using the equipment described above are absent if you use the hydrosandblasting method. The hammer drill is lowered into the barrel, and then, using pumping equipment, liquid with grains of sand is injected under a certain pressure (usually its value varies from 15 to 30 MPa). The liquid is fed through the nozzles and slowly destroys the barrel walls, ring and formation at specified points. During hydrosandblasting, a cavity is created that has the shape of a cone with increasing diameter. The depth of such a cavity reaches 1 meter, and the advantage is that the column will not be deformed in neighboring areas.

Also, sometimes to open the secondary type, milling perforation is used, in which a device with a cutting circle rotating around an axis is lowered along the column, and with its help special slots are made in the column. The disadvantage of this method is the shallow depth of descent, so it can be used in wells that, for one reason or another, cannot be deepened.



CONCLUSION

Negative properties of perforation

After the explosion of a production casing, annulus formation may occur. flows ;

When a perforator interacts with the formation, a blocking section consisting of pressed sandstone appears in the near-wellbore zone;

After the explosion, there is no filtration on the side surfaces of the channels.

Thus, after cumulative perforation is carried out, it is necessary to carry out additional measures that are costly, time-consuming, and labor-intensive. In this connection, recently, traditional perforation methods are increasingly being replaced by alternative methods of opening productive formations. In this case, drilling and slot perforators are used.

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