Application Analysis of Oil Test Fracturing Technology in Deep Gas Wells

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Abstract. In the process of oil exploration, it is necessary to define the general orientation and distribution of underground reservoirs through oil testing and fracturing operations, and to obtain the specific conditions of detailed crude oil reservoirs. Because of the characteristics of high temperature and high pressure of deep gas, it is difficult to test and fracturing deep gas wells. Based on the analysis of the characteristics of deep gas and the development needs of oil testing technology, this paper analyses the oil testing and fracturing technology of deep gas wells through reservoir modification and fluid drainage.

Key words: deep gas; fracturing technology; practical application

1. Introduction
In the process of oil testing and fracturing, there are some characteristics such as high temperature, strong pressure and low porosity in deep formation, which make it difficult to perform. Therefore, it is very important to study the technology of oil testing and fracturing in deep gas wells. Starting from the characteristics of deep gas reservoirs, this paper analyses the oil testing and fracturing technology of deep gas wells, such as reservoir modification, fluid drainage and production seeking, and discusses the oil testing and fracturing technology.

2. Current Situation Analysis of Oil Testing Fracturing Technology
Because of the influence of factors such as deep gas wells and surrounding faults in oil testing and fracturing technology, it is very difficult to fracturing technology. In oil testing operation, it is necessary to analyze the engineering conditions, geology and other aspects. Fracturing methods are divided into oil jacket, pitching, sealing and current limiting. Fracturing mode should be selected according to wellbore condition and construction pressure. The closure pressure of deep gas wells is much higher than that of ordinary gas wells. Therefore, in order to ensure sufficient pressure, proppants need to be used scientifically to enhance the effect of compression resistance. At present, the commonly used drainage technology includes jet pump, hydraulic piston pump, coiled tubing vehicle liquid nitrogen, liquid nitrogen pump truck, gas lift, suction, self-blowout and other drainage technologies. Among them, liquid nitrogen gas lift drainage technology has good safety, low pollution, low pressure and high efficiency, so it has become a common means of deep gas well drainage technology. In the process of fracturing, technologies such as drainage aids, demulsifiers and microcapsule gel breakers can be added,
so that the fracturing fluid can be reversed in time to avoid serious impact on reservoir caused by residual fracturing fluid. Before fracturing, it can also take the form of filtration to remove impurities with large particle size and prevent plugging of pore throat. After fracturing, it is also necessary to close the fracturing fluid in the form of forced closure, so as to minimize the use time of fracturing fluid, or liquid nitrogen drainage, thereby reducing pollution. Starting from the reservoir characteristics of deep wells, the suitable depth of the casing is selected according to the static depth. If the casing exceeds the standard limit, the string combination is needed to increase the length. In addition, due to the unique environment, temperature, pressure and structure of deep gas wells, the downhole string will have different effects, including expansion, bending and high temperature, which will eventually lead to the displacement of the string, which is no longer consistent with the pre-designed axial force. At the same time, deep gas wells contain a large number of highly corrosive gases, such as hydrogen sulfide. These gases will affect the material of the pipe string and cause the corrosion of the pipe string. Therefore, string material and related performance parameters are the key to ensure oil testing and fracturing technology in deep gas wells. To solve this problem, APR string testing technology can be adopted. This technology mainly consists of upper and lower two outer barrels, upper and lower two core shafts, piston, RD safety cycle valve and connecting short joints and joints, which can effectively control annulus pressure and can corrupt acidification. Corrosion detection can be carried out, and the pipe string can be washed repeatedly by means of circulation valve to prevent corrosion, and the related pressure parameters of the pipe string can be optimized and controlled by pressure control calculation.

3. Analysis of Oil Testing Fracturing Technology
When testing fracturing in deep gas wells, the pressure of the pump is often very high, and the pump injection time is relatively long, which requires a high performance of the testing fracturing equipment, and the bearing capacity of the downhole string should also be relatively strong. Because of the characteristics of deep gas wells, it is difficult to discharge the residual fluid in gas wells. It is necessary to apply such technologies as drainage aids, demulsifiers and microencapsulated gel breakers to reverse the fracturing fluid in time, avoid the residual pollution of fracturing fluid and improve the efficiency of oil testing engineering. In terms of perforation, including phase angle, average hole density and negative pressure, scientific and reasonable design is needed. During the operation of oil test fracturing, it is necessary to improve the progress of construction and use empty well casing injection to fracturing to alleviate the pressure on the pump to a certain extent. It is necessary to reduce the pressure on the fracturing equipment, and the technology of liquid drainage such as liquid nitrogen gas lift and jet discharge should be adopted to realize the timely discharge of fracturing fluid. Because of the technical difficulty in the process of oil testing and fracturing of deep gas wells, including wellbore state, construction pressure, fracturing mode, proppant and fracturing fluid, these are the key points of reservoir transformation technology. Each step will directly affect the efficiency of oil testing and fracturing of deep gas wells, which requires continuous comprehensive analysis, rational design of relevant technical parameters, so as to enhance oil testing. Fracturing efficiency.

Fig.1 Coiled tubing fracturing
4. Research and Development of Oil Test Fracturing Technology

To continuously improve the technology level of oil testing and fracturing, it is necessary to develop new technologies to improve the efficiency of oil exploration engineering. However, there are many technological links involved in oil testing and fracturing technology for deep gas wells. It requires a number of technologies and equipment to work together to improve the efficiency of oil testing and fracturing technology, and to improve the performance of various technologies and equipment. In order to improve technical efficiency, we must also pay attention to environmental protection and equipment safety. From the aspects of technology, environmental protection and safety, it is the key direction of research and development of oil test fracturing technology.

![Fig.2 G Function Analysis of Pressure Drop Curve](image)

5. Conclusion

At present, in the practice of oil testing and fracturing in deep gas wells, the technical difficulty is greater, including wellbore condition, construction pressure, fracturing mode, proppant and fracturing fluid are the key points of reservoir transformation technology. Each step will directly affect the efficiency of oil testing and fracturing in deep gas wells. The key research and development of oil testing and fracturing technology will be focused on, so as to enhance oil testing and fracturing technology and improve enterprises. Benefits of industry.

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