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Recommendations For Effective Protection of the Equipments Inside the Downhole in the *Chegara* Field Against Corrosion

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Abstract: At present , the productivity of oil and gas wells directly depends on the development of oil and gas fields. By increasing the operating time of wells at high-sulfur fields and pumping the use of appropriate inhibitors in the well at the West Chegara field.

Key words: Fields, mining, development, wells, hydrogen sulfide, oil, corrosion, inhibitors and others.

Introduction

Location of Chegara,Western Chegara, Eastern Chegara are administratively parts of Bakhoristan district of Kashkadarya region of the Republic of Uzbekistan. According to the mining data, the industrial development of the Eastern Chegara field has been carried out since 1990, the development of the Chegara field-since 2007 (the test operation of wells №1-H and 2-H was carried out in 1987 – 1988), the development of the West Chegara field-since 1994.

Within the Chegara field limits (area of wells №1-Ch, 2-Ch, 3-Ch and 9-Ch), ten oil samples have been tested which were selected at seven locations. According to the value of average indicators of oil is heavy(913,7 kg/m3), resinous(5,9 %), high-paraffin(5,22 %), sulfur(2,02 %), low-gasoline(yield of n.c. fraction - 200 ° C - 2.3%).

The free gas of wells № 3-Ch and 4-Ch in terms of H_2S content belongs to the class with a very high content of hydrogen sulfide. The content of all these compounds in the reservoir oil of the field worsens its quality and causes complications in the mining process.

The main body

It is necessary to mention that the oil in the Chegara field groups belongs to the category of sulfur (average value for the three fields is 1.97%). Besides, the gas produced in the wells along the way is characterized by a high content of hydrogen sulfide.

Hydrogen sulfide is very aggressive-corrosive, so as an impurity in natural gas, it causes corrosion of metal pipes, fountain fittings, and valves in the well. In this regard, it is advisable to take measures to protect field equipment against corrosion when developing the group of the Chegara field.

One of the most common methods of protecting equipment against corrosion is the use of corrosion inhibitors [1]. Inhibitors can be divided into the following groups:

- Neutralizers, neutralizing corrosive agents (milk of lime, soda, etc.);
- Screening inhibitors (EXG-1, I-1-A, RA-23, katapin BPV, es-1, KPI-1, PB-5, BA-6, “visco”, IFKHANgaz, Donbass-1-25-D). The protection effect is achieved by the formation of a foil that prevents the contact of the metal with the electrolyte.

In recent years, high-pressure corrosion-resistant tubing NKT-114 has been manufactured from steel grades 18-X1GMFA, 18-X1G1MF of strength group K, with a size of 114x7 mm for the equipment of wells in fields containing hydrogen sulfide. They can endure a pressure of up to 50 MPa. of the foil, which prevents the contact of the metal

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with the electrolyte. Inhibitors are provided by a dosing pump to the annular space. Arriving at the bottom, they are picked up by the upward flow of HC and spread along the walls of the tubing.

The injection of inhibitors into the reservoir is carried out periodically - from1 to 4 times a year with the help of a filling unit. This method is efficient and also low-cost. When choosing an inhibitor, it is necessary not to deteriorate the reservoir properties . In the United States and Canada, solid inhibitors are common, which are dropped or lowered by a cable to the bottom, where, dissolving in the liquid, they rise on the inner surface of the tubing NKT and fittings.

In the fields, corrosion-resistant metals are widely used to protect various elements of equipment. Thus, the use of sealing rings made of 1X8N9T steel and the surfacing of the sealing surfaces of the fountain valve valves with stainless steel electrodes contributed to an increase in the service life of these units several times. Protective coatings (metal, plastic, paint, glass and etc.) can be used in various elements of fields equipment. To protect equipment and pipes against corrosion in the presence of H2S and CO2, glass-enamel coatings applied to the inner and outer surfaces of pipes in the factory can also be used.

The benefits of enamel coatings are their chemical resistance and mechanical strength. Glass-enamel coatings have high protective properties. Under mechanical and thermal loads within the elastic strain, they work as a single unit with the pipe metal. Under operating conditions, enameled products can operate at a temperature of –50 - + 300^{o} C. The main materials that make up most enamels are non-deficient and inexpensive materials – quartz sand, feldspar and borax – 80-85 % by weight.

Conclusion

When developing fields, it is recommended to use special well designs with casing pipes made of corrosion-resistant steels and to equip all systems of production, collection and preparation of well products in advance, taking into account the purification of hydrogen sulfide, petroleum gas, oil and water. When operating well equipment, timely preventive measures are required to maintain it in operating condition.

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