REVIEW OF WORK ON MULTIPHASE FLOWS IN THE FORMATION AND WELL IN RELATION TO THE THERMOMETRY OF WELLS

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Annotation. *It is noted in this article that the underground layers are studied in the measurement of harnesses and pressures in multi-flow layers, and the data on the layer number. a lot of work is being carried out on this subject in the directions of physics and Geophysics in higher educational institutions.*

Keywords: *Temperature, multiphase flows, wells, non-isothermal filtration, liquid, pressure, oil, gas, water.*

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Аннотация. *В этой статье отмечается, что подземные потоки используются при измерении температур и давлений в многопотоковых слоях и для изучения данных о слое. в высших учебных заведениях по направлениям физика и геофизика проводится много работ по этой теме.*

Ключевые слова: *температура, многофазные потоки, скважины, неизотермическая фильтрация, жидкость, давление, нефть, газ, вода.*

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Anotatsiya. *Ushbu Maqola yer osti qatlamlarning ko'p oqimli qatlamlarda xaroratlarni va bosimlarni o'lchashda va qatlam xaqidagi ma'lumotlar o'rganilganligi qayd etilgan. oliy o'quv yurtlarida fizika va geofizika yo'nalishlarida ushbu mavzu bo'yicha ko'plab ishlar amalga oshirib kelinmoqda.*

Kalit so'zlar: *harorat, ko'p fazali oqimlar, quduqlar, izotermik bo'lmagan filtratsiya, suyuqlik, bosim, neft, gaz, suv.*

The temperature field in conditions of multiphase flows, as shown by the analysis of the literature data, has a number of features that must be taken into account when researching and interpreting the data of thermometric studies of wells.

Non-isothermal filtration of homogeneous liquids taking into account the energy equation has been studied in a number of works, of which the works of I.A. Charny [1] and E.B. Chekalyuk [2] should be mentioned first. Non-isothermal filtration during oil displacement by water was studied in the works of G.E. Malofeev and A.B. Sheinman[3], as well as N.A. Avdonin [4] and others.

It is known that:

1. After the well is put into operation (non-stationary processes) with an abrupt decrease in pressure below the saturation pressure of oil with gas at the bottom of the well, cooling of the fluid entering the well is observed. At the initial moments of time, the change in fluid temperature is due to the influence of the adiabatic effect and the heat of liquid degassing. In the future, the contribution of throttle heating of the liquid and cooling due to gas throttling and liquid degassing is observed. The transition from a negative temperature anomaly that developed at the initial moments of time after the well was put into operation to a positive anomaly depends on the magnitude of the gas factor, the ratio of reservoir, bottom-hole and oil saturation pressure with gas.

2. with a gradual decrease in downhole pressure below the saturation pressure in a well that has worked for some time with a downhole pressure above the saturation pressure, the temperature in the well initially increases, and after the pressure drops below the saturation pressure, depending on the gas factor in the well, it can be observed as a positive temperature anomaly.

3. When operating oil-saturated reservoirs with bottom-hole pressure below the oil saturation pressure with gas at the bottom of the well, both positive and negative temperature anomalies are possible. There is an inverse water-oil ratio, in which there is a transition from negative anomalies are determined by the water content of the gas factor, the ratio between reservoir, bottom-hole pressure and saturation pressure.

4. There are critical values of the gas factor Gcr, that at Gcr, the temperature change is not affected by the degassing of oil in the reservoir. At the same time, the temperature anomaly at the bottom is positive and increases with a decrease in downhole pressure, as in the case of fluid inflow.

5. With gas factors greater than the critical Gcr, but smaller than the inverse gas factor Gip, the temperature anomaly at the bottom of the well is positive, but with a decrease in downhole pressure it decreases.

6. With gas factors G, greater than the inverse, the temperature anomaly at the bottom of the well is negative and increases in absolute magnitude with a decrease in downhole pressure.

7. The presence of water in the decomposing stream reduces the cooling effect of the oil degassing effect. With the increase in water content, the value of the inverse gas factor increases, with more than 60% water content of liquid products, negative temperature anomalies (due to oil degassing in the reservoir) at the bottom of the well for real downhole pressures and gas pressures and gas factors are impossible.

8. In non-stationary processes, there is a critical value of the gas factor, in which an increase in the water content of products does not lead to a change in the flow temperature.

9. For practically realizable ratios of specific flow rates at the Rsab Rnas, the inversion of temperature anomalies can occur within a few hours after the well is put into operation, while it becomes possible to use inversion to identify intervals of oil and water flows according to borehole thermometry [5].

Literatures

1. Cherny I. A. Underground hydrodynamics. M., Gostoptehizdat, 1963. 396c.
2. Chekalyuk E. B. thermodynamics of an oil reservoir. M., "Nedra", 1965. 238c.
3. Malofeev G. E., Sheinman A. B. To the calculation of oil recovery, formation when hot water is injected into it. "Oil industry", 1963, No. 3, 36 - 39c.
4. Avdonin N. A. On the effect of reservoir cooling on its oil recovery. NTS for oil production. "Nedra" 1965, 66 - 70s.
5.Federal Agency for Education Bashkir State University. Thermohydrodynamic studies of formations and wells of oil fields Ufa RIC BASHGU 2010. 190 - 196c.
6. Hotamov, J., Bobonazarov, D., & Eshpulatov, N. (2021). The effectiveness of substantiating the scientific heritage of our great scientists in the formation of scientific education of students of pedagogical universities. Физико-технологического образование.