BURG‘ULASHDA KUCHLANISHLARNING QUDUQ TUBIDA DAVRIY O‘ZGARISHI

Tursunova Maftuna Turg‘unboy qizi
SamDU magistrant
Ilmiy rahbar:**Akilov J**

ANNOTATSIYA

Burg‘ulashda kuchlanishlarning quduq tubida davriy o‘zgarishi.Quduqlarni burg‘ulashda tog‘ jinslarida sirkulyatsiya qiladigan suyuqliklar ta’sirida harorat soviydi va qatlamlar doimiy ravishda harorati o‘zgarib turadi. Burg‘ulash kolonnasining ko‘tarib tushurish va boshqa sirkulyatsiya to‘xtashligi natijasida tog‘ jinslari vaqt bo‘yicha o‘zgarib turadi.

Kalit so‘zlar: Burg‘ulash,kuchlanish, tenglama, issiqlik o‘tkazish tenglamasi.

ANNOTATION

Periodic changes in drilling stresses at the bottom of the well In the rocks when drilling wells. Under the influence of circulating fluids the temperature cools and layers the temperature is constantly changing. Lifting and lowering of the drill string and other sirkulyatsiya interruptions as rocks change over time.

Key words: drilling, voltage, equation, heat transfer equation**.**

Quduqlarni burg‘ulashda tog‘ jinslarida sirkulyatsiya qiladigan suyuqliklar ta’sirida harorat soviydi va qatlamlar doimiy ravishda harorati o‘zgarib turadi. Burg‘ulash kolonnasining ko‘tarib tushurish va boshqa sirkulyatsiya to‘xtashligi natijasida tog‘ jinslari vaqt bo‘yicha o‘zgarib turadi.Buning natijasida tog‘ jinsida termik charchash sodir bo‘ladi.Hosil bo‘lgan termik kuchlanishlarni aniqlash uchun quduq tubi yassi deb hisoblab harorat o‘zgarishi tenglamasidan foydalanamiz.Issiqlik o‘tkazish tenglamasi quyidagicha yoziladi:

$$\frac{\partial \mathrm{T}}{\partial \tau} = a\frac{\partial^2 t}{\partial z^2}; \qquad (1)$$

Bunda T-tog‘ jinsi harorati; t-vaqt; z-vertikal koordinatasi; a –harorat uzatish koeffitsiyenti;

Quduq tubida suyuqlik harorati quyidagicha o‘zgaradi deb qaraymiz:

$$T_z = T_0 cos\frac{2\pi n\tau}{\tau_0} = T_0 cos\omega\tau \qquad (2)$$

T_0 –quduq tubi sirtida suyuqlik harorati;

Quduq tubi sirtida chegaraviy shart quyidagicha :

$$k\frac{\partial T}{\partial z} = -h(T - T_z) \qquad (3)$$

(1) tenglamaning yechimi quyidagicha bo‘ladi :

$$T = T_0 \frac{e^{-\sqrt{\frac{\pi n}{a\tau_0}}z}}{\sqrt{1 + 2\sqrt{\frac{\pi nk^2}{a\tau_0 h^2}} + 2\frac{\pi nk^2}{a\tau_0 h^2}}} \times$$

$$\times \cos\left[\frac{2\pi n\tau}{\tau_0} - \sqrt{\frac{\pi n}{a\tau_0}}z - arctg\left(\frac{1}{1 + \sqrt{\frac{a\tau_0 h^2}{\pi nk^2}}}\right)\right]; \qquad (4)$$

Quduq tubi sirtida haroratning o‘zgarishi quyidagicha bo‘ladi:

$$T_{z=0} = \frac{T_0}{\sqrt{1 + 2\sqrt{\frac{\pi nk^2}{a\tau_0 h^2}} + 2\frac{\pi nk^2}{a\tau_0 h^2}}} \qquad (5)$$

Agar kriteriy BIO ni $B_i^2 = \frac{a\tau_0 h^2}{\pi nk^2}$

Deb olsak ,tog‘ jinsining harorat o‘tkazichi katta bo‘lsa , ya’ni Bio sonining katta qiymatida

$$z_{max} = 2\tau\sqrt{\pi n\frac{a}{\tau_0}} = 2\tau\sqrt{\frac{\omega a}{2}} = \tau\sqrt{2\omega a}, \qquad (6)$$ bo‘ladi

Bio sonining kichik qiymatlarida

$$z_{min} = \sqrt{\pi n \frac{a\tau_0}{\pi n}}\left(\frac{2\pi n\tau}{\tau_0} - \frac{\pi}{4}\right) = \tau\sqrt{2\omega a} - \frac{\pi}{4}\sqrt{\frac{2a}{\omega}}. \qquad (7)$$

bo‘ladi.

$$\sigma_{xx} = \sigma_{yy} = \left(\frac{1-2\mu}{1-3\mu}\right)\alpha E \times$$

$$\times\left[\frac{T_0 e^{-\omega_0 z}}{\sqrt{1+\frac{2}{Bi}+\frac{2}{Bi^2}}}\cos\left(\omega\tau - \omega_0 z - arctg\frac{1}{1+Bi}\right) - T_{o'rt}\right], \qquad (8)$$

$$\sigma_{zz} = \frac{2\mu}{1-3\mu}\,\alpha E \times$$

$$\times\left[\frac{T_0 e^{-\omega_0 z}}{\sqrt{1+\frac{2}{Bi}+\frac{2}{Bi^2}}}\cos\left(\omega\tau - \omega_0 z - arctg\frac{1}{1+Bi}\right) - T_{o'rt}\right], \qquad (9)$$

Bunda $\omega_0 = \sqrt{\frac{\pi n}{a\tau_0}}$; $\omega = \frac{2\pi n}{\tau^0}$ va $Bi^2 = \frac{a\tau_0 h^2}{\pi n k^2}$

Tog‘ jinsi sirtida hosil bo‘lgan kuchlanishlar quyidagicha bo‘ladi:

$$\sigma_{xx} = \sigma_{yy} = \left(\frac{1-2\mu}{1-3\mu}\right)\alpha E\left[\frac{T_0}{\sqrt{1+\frac{2}{Bi}+\frac{2}{Bi^2}}}\cos\omega\tau - T_{o'rt}\right], \qquad (10)$$

$$\sigma_{zz} = \left(\frac{2\mu}{1-3\mu}\right)\alpha E\left[\frac{T_0}{\sqrt{1+\frac{2}{Bi}+\frac{2}{Bi^2}}}\cos\omega\tau - T_{o'rt}\right] \qquad (11)$$

FOYDALANILGAN ADABIYOTLAR:

Faradjev , Baydyuk ,Said Riza, Yaremechui.