

Документ подписан простой электронной подписью

Информация о владельце:

ФИО: Верисокин Александр Евгеньевич

Должность: И.о. декана факультета нефтяной инженерии

Дата подписания: 06.03.2024 11:29:29

Уникальный программный ключ:

fd7a4d68f83235300c43c0b6f10966ab195e1d00

Annotation to the work program of the discipline

Name of disciplines	Summary
Гидроаэромеханика в бурении / Hydroaeromechanics in Drilling	1. The role of hydroaeromechanics in drilling. Multiphase media in drilling processes: phases, components and dispersion of media used in drilling. 2. Fluid mechanics equationsdrilling processes. Equations of conservation of mass, motion and state for compressible and incompressible media. Rheological models of single-phase media. 3. Patterns of cuttings rise in the annular space of the well. Determination of the speed and technologically necessary flow rate of the drilling fluid, the upward flow required to carry the cuttings to the day surface. 4. Steady-state fluid flows in the elements of the well circular system: flow regimes of viscous-plastic and power-law fluids in pipes and annulus; critical Reynolds number, critical flow velocity. Calculation of hydraulic resistance in laminar flow of viscoplastic and power-law fluids in pipes. Calculation of hydraulic resistance in turbulent flow of viscoplastic and power-law fluids in pipes and annulus of a well. Local hydraulic pressure losses in the elements of the well circular system. 5. Methods for compiling a hydraulic well drilling program. 6. Steady-state flows of gas and gas-sludge mixture in the elements of the well circular system. Downstream pressure distribution in pipes and upstream gas and gas sludge mixture in the well annulus. Method for calculating the flow and pressure of compressors when drilling with gas purge. 7. Steady-state flows of gas-liquid mixtures in a well. Basic concepts and definitions of the flow of a gas-liquid mixture; flow structure, degree of aeration, flow rate and true gas content. Equation of flow of gas-liquid mixture. Calculation of pressure in the annular space and in pipes, respectively, for the turbulent flow of ascending and descending vertical flows of gas-liquid mixtures. 8. Unsteady flows of single-phase fluids in a well. Hydrodynamic pressures during tripping operations in a well, causes of occurrence, methods for calculating these pressures.
The results of mastering the discipline (module)	is able to analyze and generalize the experience of developing technical and technological projects, use standard software in the design of production and technological processes in the oil and gas industry;

labor input, cu.	3
Reporting Forms (including by semesters)	Graded (grading)
List of basic and additional literature necessary for mastering disciplines	
Main literature	There are no textbooks and teaching aids for this discipline.
Additional literature	Basarygin Yu.M., Bulatov A.I., Proselkov Yu.M. Complications and accidents while drilling oil and gas wells. Textbook. - M.: Nedra, 2000, (chapter 1). Basarygin Yu.M., Bulatov A.I., Proselkov Yu.M. Technology of drilling oil and gas wells. Textbook. - M.: Nedra, 2001, (chapter 3). Leonov E.G., Isaev V.I. Hydroaeromechanics in drilling. Textbook. – M.: Nedra, 1987. Esman B.I. Thermohydraulics in well drilling. - M.: Nedra, 1982 G.