



«HYDRAULIC FRACTURING DESIGN AND CONTROL», 5 days

COURSE OBJECTIVE:

Development of professional competencies in matters of hydraulic fracture planning and execution, modern approaches to horizontal wells completion systems, the fundamentals of quality control assurance and receipt control of chemical agents, as well as fracture network modeling principles.

ACQUIRED ABILITIES:

- To gather and prepare input data for design engineering (fracturing work program);
- To check the correctness of hydraulic fracturing design;
- To control the quality of hydraulic fracturing;
- Fracture modeling (beginner level);
- Understanding fracturing process, planning and implementation.

COURSE CONTENT:

Module Name	Content
Formation fracturing. Fundamentals.	Definition. Skin factor. Perforation job. Physics of formation fracturing.
Fracturing materials: proppant, liquid	Proppant: properties, types. Fracking fluid: selection and testing
Equipment for Hydraulic Fracturing	Units of fracturing equipment. Surface lines equipment. Support equipment. Hydraulic fracturing control and recording facilities, measuring instruments.
Completion systems	Systems for multistage hydraulic fracturing: review
Quality control assurance while fracturing	Laboratory testing. Proppant quality control. Linear and cross-linked gels parameters control. Material balance. Data reporting.
Hydraulic fracture modeling. Simulation programs	Theoretical approaches to hydraulic fracturing modeling. Key data for fracture modeling. Review of Russian and foreign simulation programs
Geomechanical and rheological aspects of formation fracture modeling	The role of geomechanics and rheology in formation hydraulic fracturing
Engineering design while fracturing. Case studies	Calculation of fracturing pressure, hydrostatic pressure, hydraulic power, and friction pressure drop. Calculation of pure liquid, mixture and proppant content volume and flow



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	rate. Flush analysis. Proppant volume calculation. Geomechanical properties evaluation.
Relevant tasks of hydraulic fracturing. Global and Russian trends	Criteria of applicability for formation simulation methods to increase formation productivity, and involve poorly drained deposits and edge zones. Main modern approaches and technical solutions in the industry.