



«ADVANCED WATERFLOODING: PHYSICS, TECHNOLOGIES, FIELD CASES», 5 days

COURSE OBJECTIVE:

improvement of professional competencies of petroleum engineers in sphere of waterflooding as secondary recovery method accompanied with significant change in physicochemical and hydrodynamic reservoir parameters which determine injection capability and productivity of wells.

ACQUIRED ABILITIES:

- determine reservoir physical parameters and predict waterflooding in sandstones and carbonates;
- analyze main processes of waterflooding with high viscosity oils and consider it in simulation and design of field development;
- plan laboratory tests and interpret received data;
- prepare input information for reservoir simulators according to standard practice;
- assess sustainability of displacement process and design unstable displacement control measures.

COURSE CONTENT:

Module Name	Content
Reservoir physics	Water relative permeability: role of sandstone and carbonate wettability. Capillary pressure at sandstone and carbonate. Areas of accessible relative permeability and capillary pressure application. Vertical equilibrium of OWC, GOWC.
Reservoir simulation of waterflood	Black oil versus compositional models – case studies. Geology and hydrodynamic simulation (CMG, Eclipse, Petrel): North Sea, USSR, USA, Australia, Brazil. . Analytical water-flood model. Exercises.
Laboratory waterflood tests	Capillary pressure impact on displacement in sandstones and carbonates. Lab core flooding analysis: design and development. Exercises. Determination of fractional flow and water relative permeability in displacement graph – graphic technic. Exercises. Features of waterflooding analysis in fracture and porous carbonate reservoir (Oman, UAE).
Formation damage during waterflooding	Prevention, mitigation and removal of productivity and water injection decrease circumstances. Formation-damage-assisted methods to enhance oil recovery. Sandstone and carbonate fields.



OGE Academy
3. Televisionniy Lane, Russia, 634003
Tel. +7 3822 660130, fax +7 3822 660307

92/5, Kurortniy avenue, Sochi, 354054, Russia
Tel./fax +7 862 2255 447
e-mail: oilteam@oilteam.ru
www.oilteam.ru

	Exercises. Techniques and technologies of improved waterflooding.
Analysis of waterflood history	Heterogenetic reservoirs waterflooding: North Sea, USSR, USA, Australia, Brazil, China, Oman, UAE. Practice of improved waterflooding in case of productivity and water injection decrease: Brazil, USSR, North Sea, Gulf of Mexico.