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«FLOW ASSURANCE IN HEAVY OIL PRODUCTION», 5 days

COURSE OBJECTIVE:

Development of professional competencies in sphere of oil and water flow assurance (from formation to oil custody transfer) based on main flow assurance principles and case studies, which is necessary for production optimization and complications management tasks solving (asphaltene deposits, hydrates, salt deposits, viscous emulsions) for efficient and safe fields operation.

ACQUIRED ABILITIES:

- Correctly assess risks in sphere of flow assurance and decision making at all stages of field development;
- Use special software for flow assurance;
- Predict and identify potential production problems;
- Predict and manage the process of emulsification of high viscosity oil, and processes associated with asphaltene deposits and hydrating during production and transportation;
- Minimize complicating factors by qualified application of modern technics and methods.

COURSE CONTENT:

Module Name	Content
High viscosity, high pour point oil and oil-water emulsions	Basic characteristics of high viscosity, high pour point oil (physical, chemical properties; chemical composition). Terminology. Heavy oil production methods. Introduction to "flow assurance". Production: from formation to oil custody transfer. Flow assurance during field's life. Process and chemical methods of production and transportation of high pour point oil.
High viscosity oil and emulsions recovery efficiency increase	Process and chemical methods of high viscosity oil and emulsions recovery efficiency increase. Main flow assuring principles. Artificial lift. Production optimization. Methods of production efficiency increase of oil with asphalt, resin, and paraffin depositions (ARPD). Flow assurance in ARPD conditions. Fluid modeling with PVTSim, SPOW. High viscosity emulsions. Methods of dealing with high viscosity emulsions in well and piping systems. Salt deposits: prevention and removal. Salt

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	deposits prediction and management. Fluids and salt deposits modeling with PVTSim, SPOW software. Solids. Cutting wear of field equipment, abrasion power assessment. Dealing with solids. Hydrating: prediction, prevention and removal of hydrates. Fluid and hydrating simulation with PVTSim.
High viscosity, stable water-oil emulsions (WOE)	Formation of high viscosity, stable water-oil emulsions (WOE). WOE rheology. WOE breaking methods. Reagent selection for stable emulsion breaking. De-emulsifiers application experience for stable emulsions breaking.