

ENERGY DEVELOPMENT PARTNERS

EOR HYDRO SLICING

Enhanced Oil Recovery by Hydro Slicing technology is the cutting continuous slots/perforations along the well-bore in productive hydrocarbons layers of vertical and horizontal wells and practically elimination of static and tangential pressure of formations around perforated zones.

The formation around wells, including hydrocarbon layers, is under static (vertical) pressure due to the gravitational weight of formation itself, and tangential (horizontal) pressure around wells, created by drilling process and by geological moves/sliding of formations layers (distorting the well-bore structures in vertical and horizontal directions).

The tangential pressure is at least 2 times higher than static vertical pressure. These pressures are decreasing the permeability and porosity of hydrocarbons layers and potential productivity of wells. The deeper the wells, the more they are under both types of pressure, “suffocating” permeability, porosity and potential productivity of wells.

Under the vertical and annular/tangential stress conditions (stress-strain states) the high overburden pressure significantly reduces the permeability near well-bore zone. Oil and gas flow cannot penetrate into the well. Porous and fractured formations are subjected to compression under the stress, stress deforms the rock mass and reduces its permeability.

The depth has a significant influence on the stress-strain state of the rock mass around the well-bore. The more depth the more stress strain states, the lower permeability, and as a result the decrease of productive efficiency.

The vertical slots will unload the vertical and annular/tangential compressive stress around well-bore productive zone. We use the proprietary hydro cutting tool with proprietary hydro jets and recycling water with abrasives (sand) to cut hydrocarbon layers through vertical and horizontal well-bore’s casing and concrete in around perforated zones and washing fragments of cuts to the well head, practically eliminating both types of pressure and increasing the potential productivity of wells by increased permeability and porosity of hydrocarbon layers.

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Also, the cuts in hydrocarbon layers around well-bore make it possible to stimulate the hydrocarbon layers by high voltage plasma discharge and petrochemical methods and avoid all environmental problems of hydro fracking.

The hydro cutting method combined with high voltage discharge and petrochemical methods has the longest period of increased wells productivity up to **10 times**, from **36 to 60 months on average**, and up to **10 years for some wells**.