

Open hole Cased hole

## Plasma impulse technology for enhanced oil recovery, completion elements cleaning

*The equipment was development by AO NPP VNIIGIS in cooperation with AO NPF GITAS*



### SCOPE OF APPLICATION

- Treating of oil and gas well perforation intervals in the late stages of development
- Treatment of filters at gas wells
- As a source of seismic vibrations in cross-borehole tomography

### FEATURES AND ADVANTAGES

A powerful pulse with an energy of about 3 kJ and a frequency spectrum from 1 hertz to 10 kilohertz is created during use the «Pritok» equipment. The set of pulses is used to treat the filter and downhole formation zone:

- the high-frequency part of the pulses decolmatizes the filter and downhole formation zone;
- the low-frequency part creates oscillations in the formation in the natural resonance mode.

#### In producing wells

- cleaning of perforated intervals from colmatated rock particles and drilling mud residues, its filtrate, as well as sediments of salts and asphaltene in the porous medium.
- opening of natural reservoir fractures and formation of new ones.
- slight change in porosity with a significant increase in permeability

#### In injection wells

- injection profile control,
- for redistribution of injected fluid over interlayers it is not necessary to carry out isolation, drainage measures with the use of various surfactants

The effect lasts from 6 to 24 months and more, depending on reservoir properties and the stage of field development. Success rate over 70%

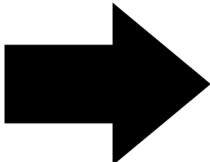
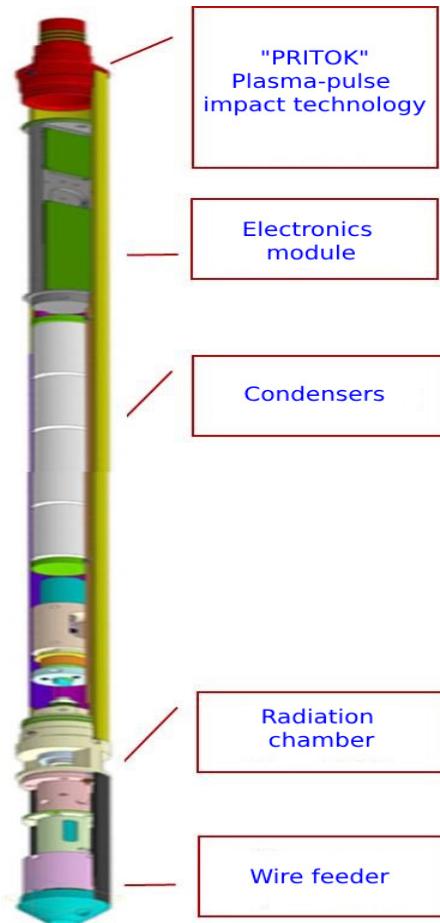
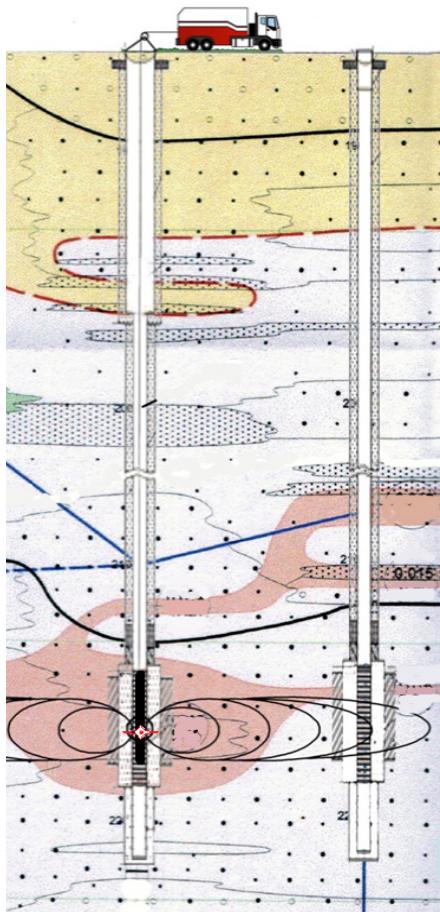
### SPECIFICATIONS

Impulse parameters:	Pritok-52	Pritok-90
- Duration	1-10 $\mu$ sec.	1-10 $\mu$ sec.
- Period (depends on cable length, max up to 5000 m)	1 pulse per 25-45 seconds	45
- Power, kJ	1,6	3,5
Limitations on the type of well fluid	No	No
Temperature, $^{\circ}$ C	60	60-105
Pressure, MPa, (above-negligible effect)	30	30
Well diameter, mm	70-150	120-220
Tool length, mm	max 2700	3000
Tool size, mm	52	90
Tool weight, kg	max 20	55-100

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## Plasma impulse technology to enhance oil recovery in htr reserves

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Before exposure to discharges



After exposure to discharges