



Simply... GROUNDBREAKING

GasGun Stimulation Bypasses Nearbore Damage and Dramatically Increases Perforation Hole Depth

APPLICATION

Stimulation (New Zone)

INTERVAL

10,506 feet

FORMATION

Wolfbone (sandstone)

LOCATION

Reeves County, Texas

POROSITY

11%

PERMEABILITY

Unknown

SKIN

Unknown

GUN DESIGN

3 3/8" OD GasGun

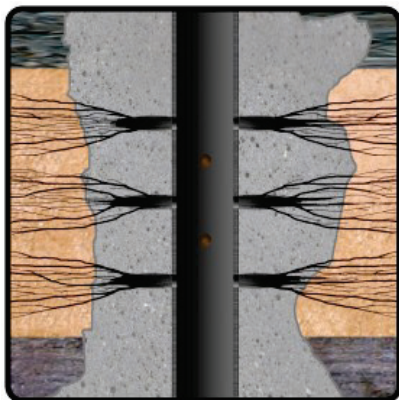
BACKGROUND

In June of 2012 an operator in Reeves County chose to perforate and shoot GasGuns to stimulate the Wolfbone formation @ 10,506'. The Wolfbone reservoir of West Texas consists of complex, low-porosity (4-10%)/low permeability(nanodarcy to millidarcy) sequences of sand, shale and carbonate layers which typically needs to be stimulated to be commercial. When the service provider ran the perforating guns out of the hole after the shot there was black water in and on the perforating equipment but no signs of oil. After swabbing the well had no oil. The service provider then ran the GasGun over the same interval. Once the GasGuns were fired and brought out of the well they were covered in "Lime green oil" according to both the operator and the service provider. Later swabbing and production showed that the GasGun was able to stimulate the zone and connect the wellbore with the desired productive zone with good result. The specific production data itself was asked to be kept proprietary by the operator but they have since completed more wells using the GasGun for stimulation.

BACKGROUND

At these depths perforating charges do not have the same penetration as they do at shallower depths. This is caused by the additional earth stress in deep environments and compressed hard rocks that are encountered at these depths. Very often simply perforating can fail to get well connected to the reservoir. This effect is often exacerbated by nearbore damage including cement invasion. The fractures created by the GasGun are shorter in deeper applications due to those same stress principles but have the power to penetrate much further out than the perforating charge and will allow an operator to fracture into the reservoir and connect with the hydrocarbon rich formation. GasGun fracture penetration @ 2,000' can be up to 50' while fracture lengths in wells of 10,000' will be closer to 10' in penetration.

SOLUTION



Nearbore Damage

- Remove skin from perforators, drilling, cement, etc.
- Fractures created at every perforation tunnel
- Improve effectiveness of acidizing