CASE STUDY

WIZARD® ZERO
LARGE-BORE DISSOLVABLE COLLET
ELIMINATING COILED TUBING INTERVENTION
IN LOW TEMPERATURE TIGHT GAS WELLS

BACKGROUND

Many operators has switched to dissolvable frac plugs from composites to **shorten post intervention time and improve operation efficiency**.

Recent years, in the southwest region of China, tight gas development is also **shifting from composites towards full lateral dissolvables**.

Source: Cleanpng.com

However, in these shallower formations, plugs **NOT DISSOLVING FULLY** has became a common issues among operators, experiencing extended post intervention, even surpassing the drill out time of composites.

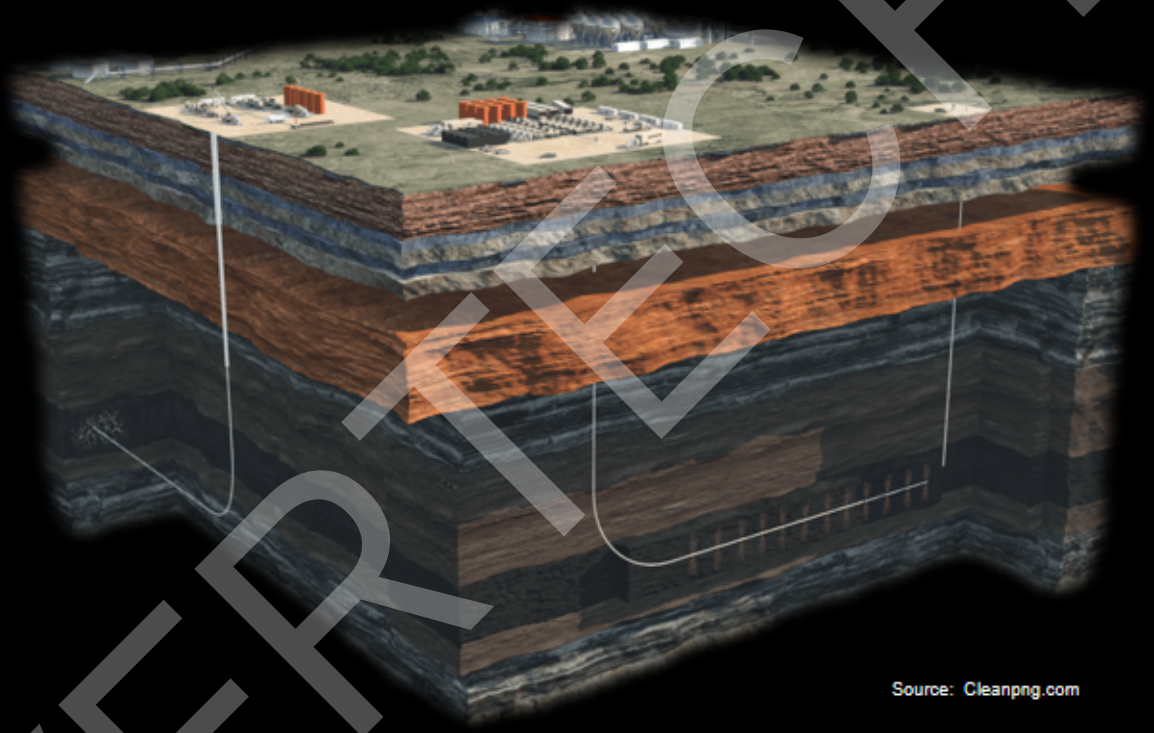
Some operators told us it can take nearly a hour to drill out a dissolvable plug. Instead of improving their efficiency, it made it more time consuming and **COSTLY**.

FINDINGS

Looking into the **problem** in detail, we quickly identified some key factors which can lead to slow dissolution.

Firstly, the formation **temperature is relatively lower** than the shale plays in this region. In most tight gas wells, the downhole temperature is between 140-158°F.

Secondly, there were plenty of water supply nearby, the frac fluid is mostly fresh water, **salinity is below 1000 ppm**.



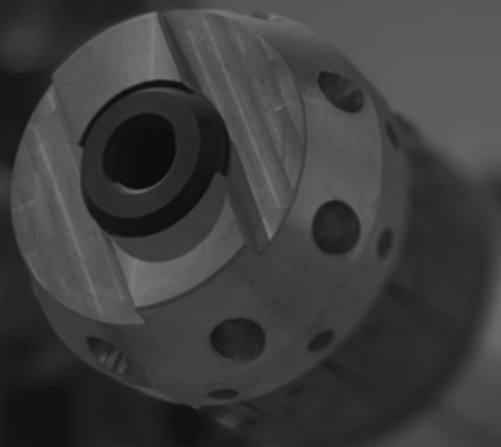
Source: Cleanpng.com

Thirdly, some operators deployed dissolvable plugs were designed for the shales, which had much higher temperature rating (250°F and above), resulted slower dissolution time in this case.

Finally, most dissolvable plugs used here were based on traditional plug designs, which **have many parts and a lot of materials**.

Although many were made of low temperature rated materials, they still could not dissolve quick enough. During clean out run, they were pushed towards the toe and form a pack off between every 5-6 stages.

THE SOLUTION



So doing what we do best…

That is finding out the problem and provide a solution,
we designed **WIZARD® ZERO Large-bore Dissolvable Collet**
to address dissolving and intervention issues.

The theory behind the design is…**SIMPLE**
We managed to compact all the core functions of a frac plug in to
one component, and it **WORKS**!

CASE STUDY

In **Oct 2022**, another operator switched to **WIZARD® ZERO Large-bore Dissolvable Collet** after conducting below comparison trial with another competitor's dissolvable plugs.

PARAMETERS:

- Downhole Temperature: 150°F
- Frac Fluid Salinity: 379 ppm
- Flowed Back Fluid Salinity: 735 ppm
- Casing Size: 5.5" 23 ppf P110
- Lateral Length: 5016.4 ft
- Stage Count: 15

POST INTERVENTION 40 HOURS AFTER FRAC:

- 1st HEEL PLUG NO TAG
- LAST TOE PLUG NO TAG
- MILL OUT TIME ZERO