

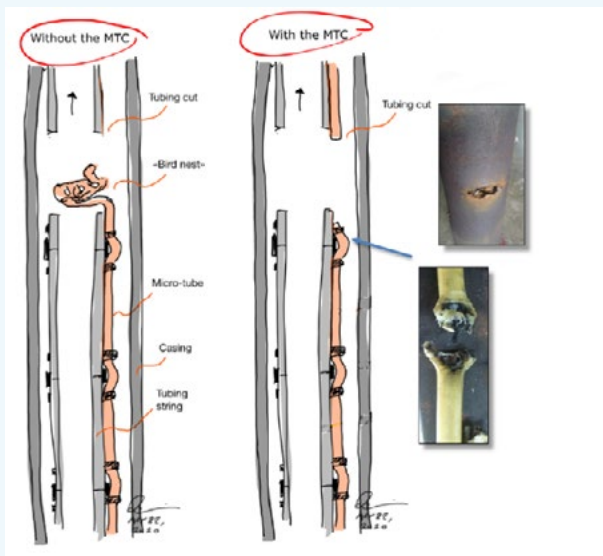
DO WE HAVE TO USE RIG FOR P&A OPERATIONS?

DO WE HAVE TO PULL THE TUBING, OR CAN THE TUBING REMAIN IN THE WELL?

WHAT AARBAKKE INNOVATION'S MTR-TECHNOLOGY ENABLES:

Allowing the production tubing to remain in a well after P&A is currently only wishful thinking – a wonderful scenario of well P&A at the end of a field life. It would save significantly both with respect to safety, emissions, and cost.

If control lines are removed, the production tubing can be plugged with cement and left in hole permanently. The need for significant crane power (hence; rig need) is eliminated, and thereby also safety risks are minimized. Last but not least: Large savings are achieved (cost and environment), as pulling/transport/deposit is eliminated.



Estimated savings: CO₂ = 6:1, NO_x = 5:1 and SO₂ = 4:1

“..if the MTR was a “off the shelf tool” we would change our P&A methodology going forward...”

P&A Engineering Supervisor, Well Operations.

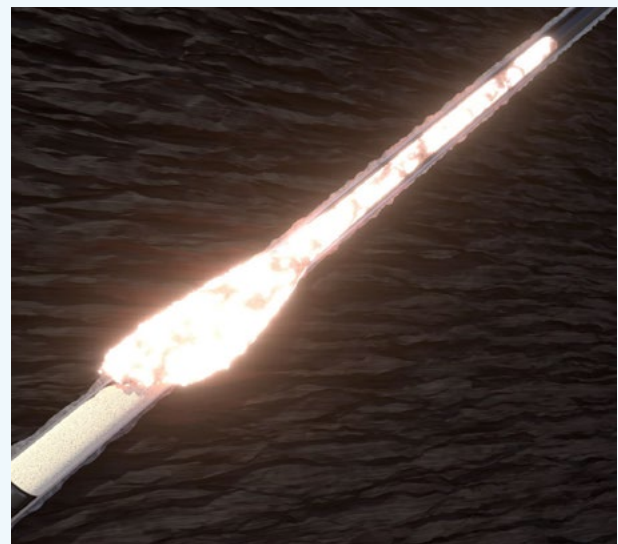
Aarbakke Innovation is developing a downhole (wireline) tool that can lock itself in place (anchor), detect the position of lines in the annulus outside the tubing (ultrasound), machine out a hole, grab and cut the lines, and thereafter remove the lines from annulus in desired interval(s). The tubing may thereafter be cemented without the lines

as a potential pathway for HC. The ambition is to perform this operation with a prototype in a pilot well in 2022.

This tool may also prove itself valuable combined with other complementary P&A technologies, and potentially in a wider scope (EOR, Slot recovery). A wireline «swiss army knife»?

WHAT INTERWELL'S «ROCK SOLID»-TECHNOLOGY ENABLES:

Rock Solid” utilizes a highly energetic chemical composition deployed on wireline. It melts the cross sectional well elements and solidifies to form an everlasting gas tight barrier. Through 2021 an extensive field trial program has been conducted in cooperation with several operators. The prototype deployed in field trials has shown that there is a challenge to retrieve downhole data from the combustion and barrier placement due to heat influence. Downhole data is vital to validate key indicators, which in term will qualify that the



reaction has occurred according to plan and to verify barrier formation process. A new generation of deployment tool kit aims to enable Interwell to evolve and expand application envelope; to improve barrier quality, and; to ensure key performance data from barrier setting for final verification.

These elements provide key information to support the technology qualification and enables Interwell to target more demanding wells and stringent regulatory requirements in the offshore market.