

A Minerals Technologies Company

### SUCCESS STORY

Well Fluid Management Well Intervention & Flowback Applications



| 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Treatability Study - Underbalanced TCP Fluid |                       |                        |                                 |
|---------------------------------------|--|-----------------------|------------------------|---------------------------------|
|                                       | Treatment<br>Stage 1                         | Treatment<br>Stage 2  | Treatment<br>Stage 3   | Treatment<br>Stage 4            |
| Alternative Treatment Paths           | Interstage                                   | Quality —             |                        |                                 |
| Alternative Treatment Paths           | ~  | Interstage            | Quality                | Target Quality                  |
|                                       |  |                       | Interstage             | Quality (TSS, NTU,<br>O&G, PPG) |
| Alternative Treatment Paths           |  |                       |                        |                                 |
|                                       |  |                       |                        |                                 |
|                                       | 0  | optimized Operational | Parameters (Q. Pdiff.) |                                 |
|                                       |  |                       |                        |                                 |
|                                       |  |                       |                        |                                 |

# for complex fluids

# **Underbalance Perforation - Fluid Recycling Process**



- CHALLENGE
- In an increasingly cost sensitive and environmentally aware E&P industry, clients continuously seek means of enhancing production in cost effective and timely manner. Reservoir properties have driven many E&Ps to Underbalanced perforation models which improve skin but drive up operating risk and cost.



## SOLUTION

• Designed a package to receive and filter contaminated fluid at 6 bpm



## RESULTS

• Checking all the boxes in reducing cost by saving time. Time associated with fluid transport, disposal, and resupply

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# **Underbalance Perforation - Fluid Recycling Process**

#### CHALLENGE

In a multi-well deep water Underbalance intervention campaign, our client sought a 4-Phase Separation Package that adhered to both government and ABS requirements for installation on multiple MODUs in GOM. Although package criteria altered slightly per campaign the general requirements are as follows:

Fluid Rate - 6 BPM Gas Rate - 6 MMscf/d Surface Pressure -15 kpsi Holding Volume - 900 bbl Deck Area Limits - ~40 ft x ~100 ft

#### **CETCO SOLUTION**

By commingling our Well Test and Water Treatment & Filtration services, CETCO Energy Services , (CETCO) offered a single vendor solution to receive, treat, and transfer fluid. This solution was then validated by our R&D and process engineering group providing supporting documentation against actual well bore fluids. Highlights of Solution: High Capacity Remote Venting System (Safe Area)

Area Classification Compliant

Large Fluid Holding Volume

In-tank Oxygen Detection System

Closed Loop Filling of MPTs (When Necessary) Sand Slurry Disposal System





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#### RESULTS

Prior to installation of CETCO Fluid Management and Recycling Package, 100% of surge volume and subsequent reverse outs were sent for disposal accounting for waste of between 800 to 2,000 bbl per well.

On average CETCO package is able to return between 50%-90% of the volumes previous disposed. This results in less logistical cost and ultimately disposal fees. At average cost of ~\$250 per barrel, CETCO has saved our client ~\$5.2 MM and counting in fluid/logistical costs. This does not include the added well production benefits of perforating Underbalanced which is made possible through hydrocarbon handling system.



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