



## Control your cleanup

Uniformly remove WBM filter cake to optimize well productivity



# The uniform effect all along the wellbore



Effective removal of drilling damage before putting wells on production maximizes well performance, cash flow and NPV.

ORCA for WBM enables operators to restore and potentially improve permeability in horizontal openhole completions and increase production in mature wells without the need for rig intervention.

ORCA's uniform wellbore cleanup ensures the cleanest wells and maximizes production to deliver significant financial benefits.

# Maximize production of new wells from day 1 or successfully remediate underperforming wells

- optimize zonal coverage and achieve uniform radial and longitudinal fluid placement throughout the wellbore, thereby optimizing production from the whole of the horizontal section
- maintain and improve permeability all along the payzone

## Reduce pumping time by up to 75%

- significantly reduce pumping time and remove the need for stimulation vessels and waiting on weather
- mix using standard equipment
- placement on new wells using the mud pumps and drillstring
- placement for wells already on production via coiled tubing or bullheading
- reduce or eliminate the need for swabbing

In some cases it is possible to use ORCA for WBM as a gravel packing fluid, where the filter cake remains intact during gravel placement before being broken down. Placement post gravel packing can be achieved using a wash pipe.

## Improve HSE/environmental compliance

- improve HSE on the rig, removing the need for the transport and handling of corrosive and hazardous conventional acids
- benign non-corrosive formulations
- no need for corrosion inhibitors
- protect intelligent completion hardware

- leave in wellbore for months before flowing well
- no requirement for complex disposal post treatment
- ORCA for WBM chemicals are not regulated for transport, are low hazard and can be air freighted if necessary

#### FILTER CAKE IS A BARRIER TO PRODUCTION

## Uniformly remove water-based mud damage in long openhole horizontal and deviated wells in a single treatment

ORCA for WBM treatment fluids are used to treat filter cakes arising from drilling with water-based drill-in fluids. ORCA for WBM treatment fluids are applied to treat new wells when first drilled or as remedial treatments for wells already on production.

ORCA for WBM is particularly suitable for treatments of water-based muds containing carbonate weighting material or drilling cutting fines, and biopolymers such as starch, xanthan, cellulose and derivatives of these polymers. ORCA for WBM is effective in a wide range of oilfield brine types and densities.

ORCA for WBM treatments optimize zonal coverage to regain and improve permeability along the payzone and improve mud damage removal for horizontal wells, where low draw down limits the ability for wells to 'self-clean.' Uniform wellbore cleanup ensures the cleanest wells and maximizes well production to deliver significant financial benefits.

#### Single step, dual attack treatment

ORCA for WBM comprises an in-situ organic acid generating package to greatly improve acid placement and uniformly dissolve carbonate in mud cake across the wellbore face. In-situ acidizing creates ideal conditions for the optimal activity of Cleansorb's polymer breakers which can be incorporated into the fluid for single stage combined acidizing and polymer breaking treatments.

- acidizing, carbonate dissolution and polymer breaking achieved in a single treatment
- achieve high or low rate treatment placement as required without compromising performance
- avoid wormholing, gas coning and water breakthrough

## WATER-WETTING

During the treatment filter cake particulates and the formation face become water-wet allowing dissolution of acid-soluble materials by acid produced in-situ

#### IN-SITU ACIDIZING



Acid generated in-situ dissolves acid soluble solids such as calcium carbonate weighting material or drill cuttings fines

## PARTICULATE DISPERSION



Water-wetting of the filter cake particulates enhances their dispersion into the ORCA for WBM treatment fluid

## POLYMER BREAKING





**Before -** Large branched polymer molecules in the drilling fluid form a complex network within the drilling mud filter cake

After - These polymers are broken down into their constituent monomers which disrupts the filter cake structure



#### FILTER CAKE UNIFORMLY SOLUBILIZED



#### **CLEAN WELLBORE OPTIMIZES PRODUCTION**



## Uniformly remove filter cake from sand control completions in a single treatment

Where sand control completions such as screen completions are used, solubilizing the filter cake using ORCA for WBM before placing the well on production enhances sand screen life. The possibility of the filter cake lifting off and blocking the screen or other sand control completion if left untreated is avoided.



FILTER CAKE UNIFORMLY SOLUBILIZED



#### CLEAN WELLBORE OPTIMIZES PRODUCTION



#### WELLBORE FACE & SCREEN BLOCKED WITH MUD



Untreated drilling mud filter cake can block and impede flow through sand screens when wells are activated

## ORCA FLUID DISRUPTS MUD RESIDUES



ORCA for WBM disrupts and dissolves drilling mud filter cake and acid soluble solids to enhance flow through screens



Uniform mud damage removal across the whole interval reduces the likelihood of flow 'hot spots' and enhances screen life

## Uniformly remove near wellbore damage in a single treatment

Near wellbore production related damage such as scale may be amenable to solubilization by ORCA for WBM to restore the productivity of damaged wells. If carbonate scaling is present the scale can occur as alternating layers of carbonate and hydrocarbon. ORCA for WBM may be formulated with suitable surfactants to dissolve both the hydrocarbon and carbonate components of such scales. Removal of near wellbore damage such as infiltrated drilling fluid solids may also be treated using ORCA for WBM.

#### NEAR WELLBORE DAMAGE IS A BARRIER TO PRODUCTION



#### NEAR WELLBORE DAMAGE UNIFORMLY SOLUBILIZED







#### Damaged rock

Drilling fluid solids that infiltrate the formation are barriers to flow

#### INFILTRATED DAMAGE REMOVAL



Removal of solids that have infiltrated the formation restores the natural permeability of the formation and

improves fluid flow

Damage removed

# Removing scale damage

ORCA for WBM dissolves acid soluble scales such as calcium carbonate to restore flow

## SCALE DAMAGE REMOVAL



SCALE DAMAGE

#### Production related damage

Scale may be deposited in the near wellbore formation or tubulars during production









## Laboratory validated

## Uniform removal of WBM filter cake damage

ORCA for WBM is particularly suitable for treatments of water-based muds containing:

- carbonate weighting materials or drilled-in carbonate formations and containing carbonate drilling cuttings or fines
- biopolymers such as starch, xanthan, cellulose and derivatives of these polymers
- ORCA for WBM is effective in a wide range of oilfield brine types and densities



**Pre-treatment** The filter cake is fully intact and has formed a barrier all along the wellbore which can impair production and injection.



**Post-treatment** After applying the ORCA for WBM in a single step the filter cake has been uniformly removed. All acid-soluble particles have been removed and polymers broken down, significantly improving the

well productivity.

## Proven and robust technology

- proprietary technology engineered for specific applications prepared by the Cleansorb team of chemists and field engineers
- log effective on all common water-based muds, drill-in fluids and completion brines
- le technical validation and laboratory results available
- field case histories (cleansorb.com) prove the efficacy of the technology and its value to operators



High permeability formation core plug

Low permeability formation core plug

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- ORCA for WBM is proven to regain the permeability levels of underperforming wells. The results of independent tests are graphically represented above and demonstrate the regain in permeability
- 🧔 following treatment of a high permeability core a 90% regain in permeability was achieved after 20 minutes flow
- following treatment of a low permeability core a 90% regain was achieved in a little over 3 hours flow

# Cleansorb

## The innovative reservoir chemistry company

Cleansorb's patented in-situ acid generation technologies achieve uniform radial and longitudinal distribution of cleanup and stimulation fluids in the target zone(s) without risk to the formation, environment or completion equipment.



## Get in touch

Cleansorb has a team of ORCA for WBM specialists to advise you on the best strategy for your circumstances. Please email **contact@cleansorb.com** for more information.

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