PRODUCTION ENHANCEMENT

TENDEKA

The Titan Process, Organic Oil Recovery

A novel biodegradable process with a 92% average production increase worldwide of onshore & offshore mature fields

The Titan Process is a five-step process that includes the deployment of a new form of Enhanced Oil Recovery

The science of Organic Oil Recovery involves essentially feeding microbes that are living in oil reservoirs with a custom-formulated biodegradable organic nutrient so that the microbes exponentially multiply. The microbes interact with the immobile trapped oil and thereby alter the interfacial tension of the oil causing microscopic droplets to form. The micro oil droplets are then released and can be produced back to the surface.

The five steps of the Titan Process include:

Step 1: Candidate Selection

The general field characteristics that the Titan Process can ideally be applied include:

API Gravity	16-41˚
Temperature	<185˚F
Permeability	>50md (have treated as low as 7.5md)
Salinity	<10% (ideal)
Total dissolved solids (TDS)	<10% (ideal)
Porosity	14-30% (normal range)
Formation type	Sandstone, carbonate
Water cut	50-98%
pH	6-8 (ideal but depends on microbe ecology able to work outside this range)

Water flood response is a top indicator of success with Titan Organic Oil Recovery

Step 2: Laboratory Analysis

If the petrophysical information appears favorable, representative samples of produced water are collected and evaluated to determine if a favorable microbial community exists in the reservoir. A suitable nutrient stimulant is tailored for the specific microbe community.

Step 3: Insitu Microbial Response Pilot Test

The nutrient package is blended and pumped into a single oil producer followed by 150% displacement volume. The well is shut in and sampling is collected on a scheduled basis.

Features

Microbial Population Expansion depends on:

- Temperature
- Salinity
- Chemical compounds in the water
- Volume

Benefits

- Substantial Increase in Oil Production
- Significant Increase in Cash Flow
- Reserves Increase
- Oil Fields Can Be Tested Easily and Inexpensively
- Low Cost Field Pilots
- No Capital Expense
- Field Net Present Value Increases
- Well Abandonment may be Deferred

Step 4: Targeted Waterflood Implementation

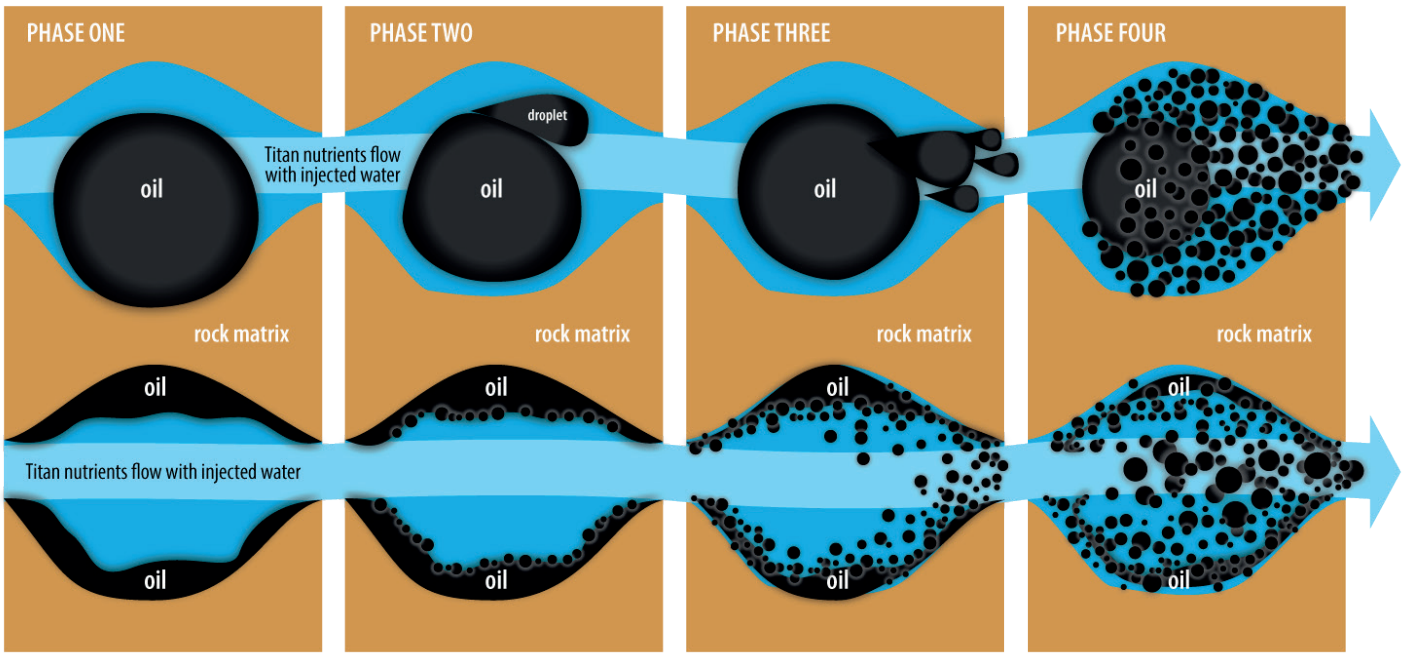
Offset injector wells are selected for treatment on a scheduled basis.

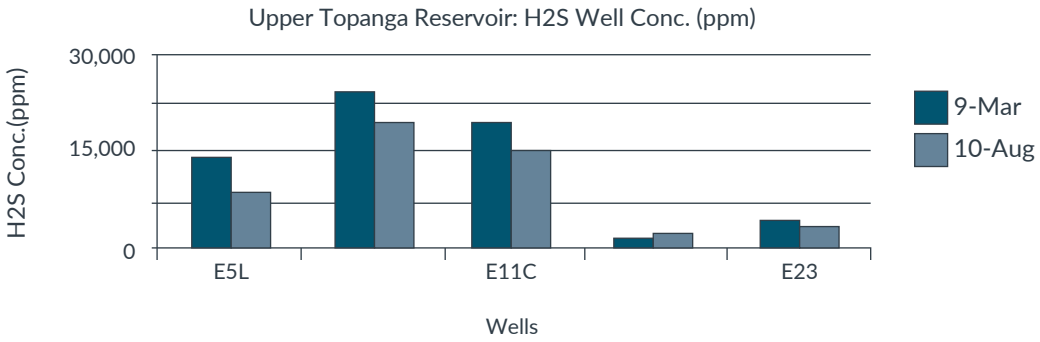
Step 5: Full Field Development

This step occurs when the field shows a noticeable increase in oil production. The well is then monitored and additional treatments may be recommended.

In partnership with:

TITAN Oil Recovery, Inc.

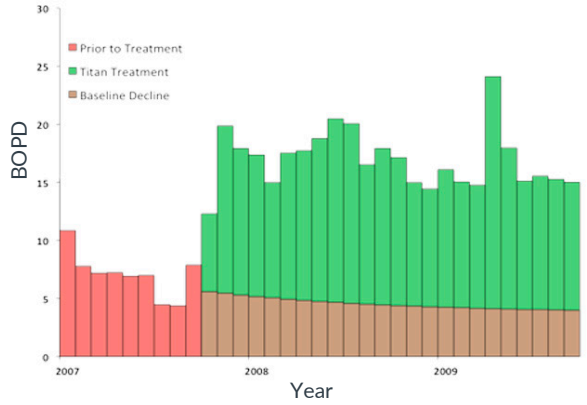




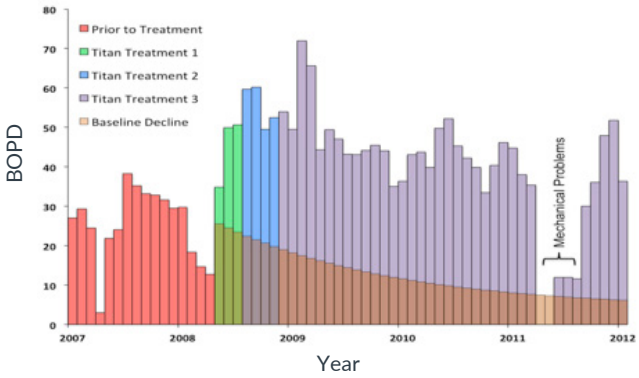
Improved Oil Mobility	Smaller micro droplets move more easily through the pore matrix
Pore to Pore Displacement	Fluid mobility creates a vacuum which is filled by fluids from adjacent pore spaces
Relative Permeability	Relative permeability of water decreases and relative permeability of oil increases
Wettability	Oil droplets are more easily released from the rock surface
Water Cut Decreases	Due to the higher relative permeability of oil, less water is produced
Viscosity	Apparent viscosity decreases with the formation of the droplets and the reduction in the resistance to flow
Interfacial Tension	The interfacial tension between oil and water decreases as the microbes become more hydrophobic at the pore interphase to help separate the oil
Waterflood Sweep Efficiency	Only in high permeable areas (thief zones) the combination of the micro-droplets, water and microbes can combine and agitate to form a temporary mild emulsion which temporarily divert water elsewhere

The Micro Droplet Effect

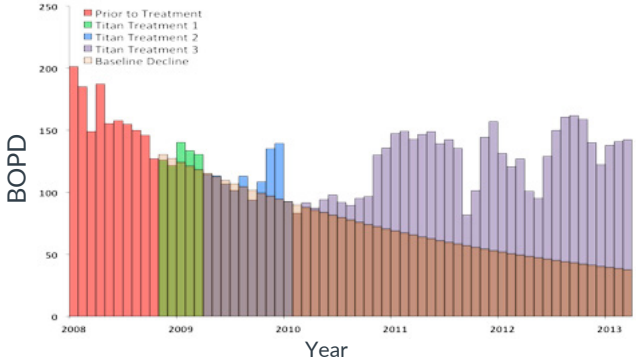
Saskatchewan Production Response: 200 %, 1 Treatment



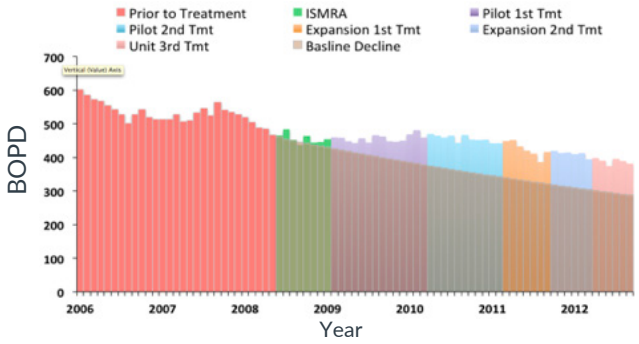
Canadian Water Injector Treatment Impacts Offset producer



California Offshore, production up 200 % three years after treatment



Canadian Unit Response to Titan Process



Dead California Well (Shut In Since 2003) Returned to Production in 2008