



## Case History:

# Produced Water Treatment from A to Zinc

## Reducing Levels of Zinc in a Produced Water Stream

### Problem

At vast depths, the ocean floor consists of layers of decaying plant and animal matter, containing chemicals like sulphate and zinc, which has built up over the years. When operators are drilling, the matter is disturbed and the various chemicals are released into the water. Since the mid 1980's the pace of exploration, production, and development in the deep waters of the Gulf of Mexico has rapidly accelerated, resulting in numerous wells releasing zinc into the water environment.

Consequently, during oil recovery, subsea pipelines collect produced water that can seriously harm the environment if released back into the sea untreated.

When a major deep water operator in the Gulf of Mexico realized its produced water stream contained particularly high levels of zinc, the operator had to find a way of treating the produced water prior to discharge to avoid causing any damage to the marine environment and to ensure compliance with discharge regulations.

### Solution

In order to effectively treat and discharge the fluid safely, the operator contracted CETCO Oilfield Services to provide a temporary produced water treatment system and personnel.

The equipment package incorporated a CETCO Oilfield Services patented flocculant product that was used to separate zinc from the produced water.

The innovative treatment system included personnel and equipment for 24 hour coverage to treat all of the production platform produced water until a permanent solution could be deployed by the customer. The results were a reduction of the amount of detectable zinc in the produced water to a lab undetectable level.



Customer's offshore production platform with customer's, CETCO's, and 3rd party's production treatment equipment

WATER TREATMENT | PIPELINE | WELL TESTING | WASTEWATER | RENTALS | NITROGEN | COILED TUBING



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Produced water chemical treatment setup



Hands-free transfer of solids to shipment/  
storage tank

### Method

CETCO Oilfield Services participated in pre-job meetings with the customer's engineering and operational personnel to fully understand the needs and requirements of the customer's project.

The proposed equipment package was custom designed to meet the operator's needs, and initial lab test results conducted by CETCO confirmed the ability of the proposed process capabilities to meet the project objectives. CETCO then deployed the treatment package utilizing standard operating procedures for quality assurance.

The innovative treatment involved a five step process to reduce the detectable zinc levels in the produced water stream to lab undetectable levels:

- (1) CETCO adjusted the pH of the produced water stream to ensure it conformed to local environmental regulations;
- (2) CETCO then used its patented

flocculant product to separate the zinc from the produced water; (3) two large filter presses pressed out the zinc; (4) CETCO used a vacuum system to safely remove the solids while (5) the remaining produced water was then treated through CETCO's patented flow back process for overboard discharge.

### Results

Over the course of the three month project, CETCO Oilfield Services treated 187,500 barrels of produced water and allowed the operator to comply with the Mineral Management Service (MMS), Environmental Protection Agency (EPA), and National Pollutant Discharge Elimination System (NPDES) regulations for overboard discharge.

The temporary treatment process was highly successful, with influent zinc levels of 85-115 ppm reduced to zero detectable after treatment.

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