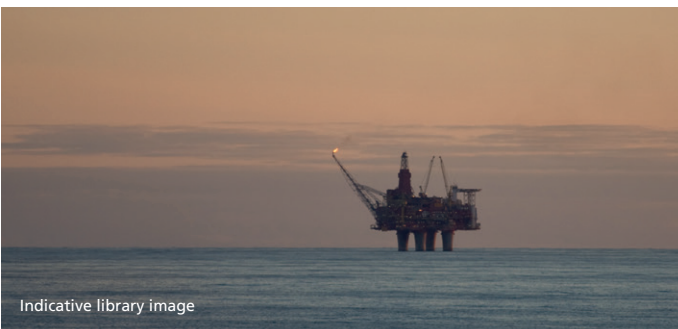


## CASE STUDY

**ClearWELL**  
Oilfield Solutions  
Continuous Scale Control

### NORTH SEA OPERATOR BENEFITS FROM CLEARWELL'S SUBSURFACE SCALE TREATMENT

**LOCATION:** North Sea  
**APPLICATION:** Gas Lift Oil Well  
**RESERVOIR DEPTH:** 2,700 – 3,200m



#### BEFORE CLEARWELL

Carbonate and sulphate scale forming in the wellbore and on the downhole equipment of an offshore oil well was impacting production and well integrity. Integrity risks occurred due to barium sulphate scaling on the sub-surface safety valve and gas lift valves were also impacted.

To mitigate the impact of scale build-up the field operator employed regular but costly well interventions to pump acids every 6 – 8 months. The well was also operated at reduced drawdown to minimise build-up of carbonate scaling in the tubing but this reduced oil production. These measures, combined with well surveillance, assured production however the total annual cost of production deferment and intervention treatments exceeded \$2MM.

#### AFTER CLEARWELL

Seeking an alternative solution, the operator deployed ClearWELL™ technology. Well surveillance was maintained, and clear criteria set to determine the impact of the device. With ClearWELL™ the operator increased the draw down on the well by 5 bar and monitored production performance. Scale build up was retarded and no intervention was required

for 40 months, saving four intervention treatments and generating a >\$1MM direct saving. The ability to operate the well at an enhanced drawdown rate added significant production volume over the same time period. The total value delivered was around \$4MM.

Additional ClearWELL™ units have been added at the same installation to provide further protection and the operator continues to benefit from zero intervention scale control.

#### QUICK FACTS

- Carbonate scaling inside production tubing was restricting production from an offshore well
- Sulphate scaling was adhering to sub-surface safety valves and gas-lift valves
- ClearWELL™ stopped scale sticking:
  - Saving annual intervention and deferred production costs of \$2MM p.a.
  - Saving >4 offshore acid jobs
  - Increased production
  - Less chemical discharge
  - Significant cost savings

#### THE PROCESS

- The ClearWELL™ unit is connected to production equipment at the surface wellhead – no intervention required, no loss of production.
- The unit transmits a pulsed radio frequency signal down into the wellbore or along flowlines and equipment. The pulsed signal delivers energy to the scaling ions, controlling precipitation, keeping the liquid below saturation and minimising scale growth on production equipment.
- ClearWELL use satellite monitoring to ensure optimum unit performance. Where required personnel perform regular non-intrusive equipment checks.
- ClearWELL™ systems are low power consumption and supplied as a certified Class 1, Zone 1. The AC signal system is corrosion neutral, no reported gauge signal interference.

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