

# THE GRC SOLUTION

## RESERVOIR MONITORING IN OFFSHORE WEST AFRICA

### BOTTOM HOLE PRESSURE DATA PROVIDES PRODUCTION OPTIMIZATION

#### THE SITUATION

During a well completion in Offshore West Africa, our client chose to install the OPTIM QTIEG permanent downhole pressure and temperature sensor. The client completed this well using a screen and gravel pack.

#### THE PROBLEM

With an abundance of natural gas in these formations, the customer is able to complete wells with gas lift mandrels to help optimize production. The range at which they can produce these wells varies from 1000 to 6000 BPD. However, there was no way to tell if they were producing the well at a “safe” rate and not damaging the lower completion asset. Damage to the lower completion asset could cost millions of dollars to work over and replace.

#### THE GRC SOLUTION

The client selected the OPTIM QTIEG analog quartz transducer downhole pressure and temperature sensor. This sensor has a resolution of 0.01 psia at a 1 second sample rate. The pressure and temperature of the well can be measured directly at the lower completion just above the perforations. GRC’s analog quartz sensor technology provides a low cost solution with low power consumption for the battery and solar powered surface data acquisition electronics.

GRC’s hermetically sealed downhole electronic design allows the OPTIM QTIEG to outlast the competition in extreme pressure and temperature environments.

#### THE RESULT

The data from this sensor allowed the client to monitor the rate of drawdown during the clean-up process and well test to ensure that no damage was done to the lower completion assembly (screen and gravel pack). After the well test was complete, the client was able to monitor the shut in and build up process and evaluate the damage done to the reservoir due to the amount of drilling fluid lost during the completion process.

After four more successful sensor installations using GRC’s OPTIM QTIEG, the client continues to drill and produce wells in the same field. The client elected to continue completing these wells with the GRC OPTIM QTIEG permanent down hole pressure gauges so that they may monitor the pressure changes versus time throughout the entire field and know how their reservoir is changing over time.

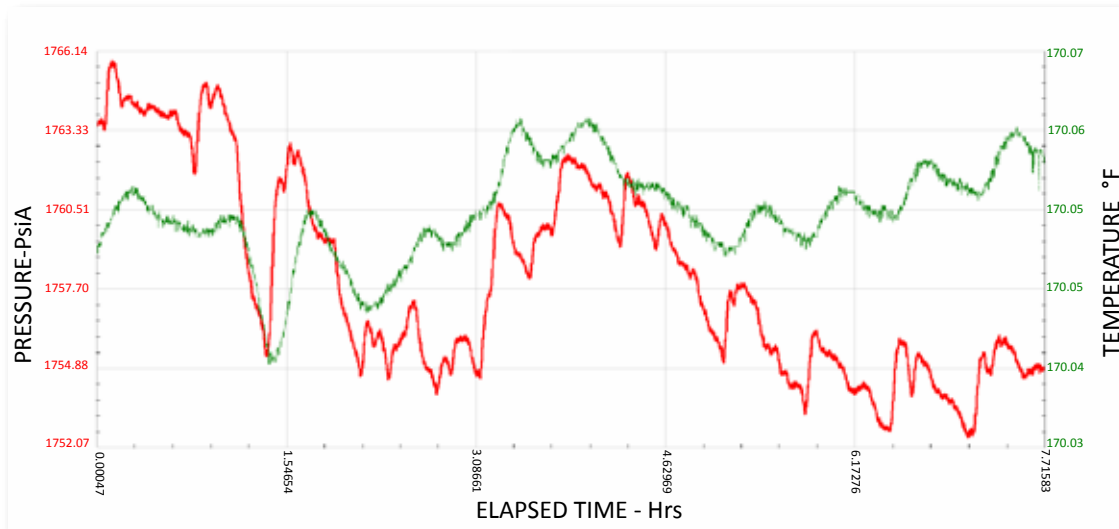


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EXAMPLE OF REAL CONDITIONS AT A 1 SECOND SAMPLE RATE VS TIME WITH QUARTZ TRANSDUCER TECHNOLOGY

### TEMPERATURE/PRESSURE DATA



**BOLD GROWTH**  
**INNOVATIVE TECHNOLOGY**  
**CUSTOMER PASSION**

Geophysical Research Company, LLC (GRC) is a worldwide leader in downhole data acquisition and the leader in proprietary technology for measuring, recording and delivering reliable and accurate well data with extremely high resolutions.

GRC provides gauges and surface readout tools for permanent, memory, and artificial lift applications and is the manufacturer of the Amerada® mechanical gauge used for over 80 years in the oil and gas industry.

**OPTIMQTEG™**  
QUARTZ TUBING INSTALLED ELECTRONIC GAUGE

- ACCURATE
- REPEATABLE
- VERY SENSITIVE
- HIGH RESOLUTION
- PROVEN RUGGEDNESS
- RAPID RESPONSE TO TEMPERATURE CHANGE
- ELIMINATES WIRE-LINE WORK
- CARRIER-MOUNTED
- SURFACE READ-OUT IN REAL-TIME

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