

Advancements in Pressure Coring Techniques and Surface Handling Methodologies to Deliver Quality Samples to the Analytical Laboratories

Matt M. Bjorum¹

¹Corpro - ALS Oil & Gas, Aberdeenshire, UK

Abstract

The ever-increasing global demand for oil and gas has driven more operators to target unconventional shale plays. This increase of activity is also driving demands for new technologies that maximize efficiencies in assessing the risks and economics of these resource plays while simultaneously maintaining the highest safety standards.

One key area of technological growth lies in the evaluation of potential hydrocarbons present in these targeted reservoirs that is in part driven by the ability to cut high quality core samples. As most laboratory measurements depend on freshly cut core to accurately assess oil in place, gas in place, gas and oil geochemistry, permeability, porosity and saturations along with several other analyses it is critical to collect pristine core samples. These pristine samples are crucial when attempting to assess the risks, economics, and potential successes of a targeted resource play.

When utilizing traditional coring techniques it is impossible to recover all of the fluids and gasses associated with a core sample that is cut as these components can escape the core barrel during the cores trip to surface. The consequence of these lost gases and fluids results in a data gap that a laboratory must then apply a calculated model to in order to provide deliverable results.

Successful advancements have been made over the last couple of years in developing a downhole tool capable of collecting a given core sample under pressure while retaining all associated gases and fluids as it is tripped to surface. With the improvements in the technology several protocols have been developed to ensure the coring parameters and subsequent surface handling techniques are established and strictly adhered to in order to meet the objectives of the core, gas and liquid analytical programs.

As one of the primary objectives of these targeted shale reservoirs is to obtain accurate gas and oil ratios, quantities and compositions the improvement in these new coring technologies and well site protocols has proven to be valuable in more accurately determining these values during the evaluation program.