Tullow Oil was keen to investigate final recovery options in the planning stage of a heterogeneous African field. Since oil is not uniformly located in its reservoirs, to increase predicted cumulative production the company knew it needed to penetrate a number of isolated zones that exhibited maximum mobile oil accumulation.

An existing well model outlined three pay zones with the potential to increase contact with the reservoir pay zone. When Tullow met with Schlumberger to discuss optimal well placement, it became clear that the Maximum Reservoir Contact (MRC) workflow within the Petrel platform would address the challenges facing Tullow.

**High-potential areas isolated—fast**

The MRC workflow uses an optimizer that maximizes or minimizes an objective function (cumulative production, NPV, water production, etc.) by modifying control parameters within pertinent limits. This provides the best combination of parameters to meet a specific objective. The MRC workflow runs rapidly in the Petrel platform, enabling optimization to be carried out within practical time frames.

The workflow allows users to create recoverable oil maps to identify and isolate high-potential areas in the field, as well as identify connected regions within these zones to highlight maximum hydrocarbon inflow. The Petrel best-fit well design process can then be used to design optimal well trajectories to fully penetrate target zones of interest.

“**The MRC workflow allowed us to pinpoint our horizontal well placement to ensure we achieved maximum contact with the remaining reserves and extend the production plateau—the subsequent wells have significantly increased our field recovery. The technology has also had a positive impact on our processes, helping us streamline our well planning activities.**”

Subsurface Leader
Tullow Oil
Optimal well placement

Schlumberger engineers implemented the MRC workflow and configured it to meet Tullow’s exact requirements. Tullow then used the workflow to define zones of interest in the reservoir and propose new well trajectories to penetrate high-potential areas for maximum contact.

Tullow was able to optimize horizontal well-placement planning based on rock quality index values generated from mobile oil properties and permeability levels, pinpointing the location of almost 40 new wells in the sector of the field with the most untapped potential.

As a result, Tullow increased the predicted field oil recovery by an initial 12% through these horizontal wells. It then managed to grow this figure to 33% by adding intelligent well completion technology. In addition, the workflow enabled Tullow to accelerate its well-placement and completion-design processes—what used to take months now takes weeks.