

A New Approach for Field Development of Complex Heavy Oil Reservoirs in a Wetland Environmentally Sensitive Area, Tambaredjo NW Field, Suriname

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This paper presents a new approach for the development of complex heavy oil reservoirs at Tambaredjo North West field located in a wetland environmentally sensitive area. The field exhibits superimposed reservoirs from Paleocene to Miocene age, with stratigraphic traps, which are heterogeneous, erratic and unconsolidated sands, at shallow depth with oil gravity of 16°API.

This approach consists of a strategy with 7 key success factors: 1) Optimum well placement by adapting a geological modeling methodology, 2) Increased reservoir contact and drainage by designing new well architectures including from multiple reservoirs, 3) Reduce evaluation cycle time of EOR technologies by implementing field laboratories, 4) Design and construct flexible capacity surface infrastructure and processing facilities adopting multiphase technologies, 5) Reduce uncertainty by applying new technologies for reservoir data acquisition, 6) Optimize field development cycle time applying Front End Loading project management methodologies and 7) Design a robust field development execution plan with several scenarios that are considered for continuous risk and economics evaluation.

The strategy is planned in four steps with three decision PDCA (Plan-Do-Check-Act) cycles to manage risks and uncertainties impacts with high probability of success and the potential to increase reserves and well productivity levels above the existing levels known so far in Suriname oil operations. The first step aims to study, select and drill the first twenty well locations in the best projected areas from the Geocellular 3D model. The second step aims to study select and drill 60 vertical well locations. In the third step an integrated field laboratory specifically designed for new drilling technologies evaluation and adoption will be executed.

With this new approach for field development the recovery factor will increase to more than 15 percent with an increase in proved reserves and the success ratio of development wells.