

Field experiences of cased hole formation resistivity measurements to identify overlooked hydrocarbons in multi-layered reservoir.

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Abstract

In today's competitive market, it is increasingly important to improve field productivity, extend field life and increase asset reserves. One way to achieve this is to add new wells which are expensive and time-consuming. The other alternative is to identify bypassed hydrocarbons, track changes in saturations and detect movement of reservoir fluid contacts from existing well bores already in place.

Large amounts of overlooked hydrocarbons exist in old wells. It is considerably more cost effective and often more environmentally friendly to explore for those hidden hydrocarbons in old wells rather than to drill new wells. As the field matures, there is a need to reevaluate the formation in older reservoirs and to focus the development strategy and approach on bypassed oil pockets and depletion levels in producing intervals. The ability to acquire essential logging data behind casing adds a new dimension to cased hole formation evaluation for locating and evaluating potential hydrocarbon zones in a mature field like the Upper Assam self.

In this paper, we will share some of the field experiences of cased hole formation resistivity logging run in a couple of depleted wells completed in a sandstone reservoir. The reservoir was deposited under deltaic environment and is composed of mostly medium to fine grained sandstones inter-bedded with siltstones and shale.

The objective of this study is to identify the overlooked hydrocarbons and to determine the depletion levels of producing intervals, thereby ensuring that no producible hydrocarbons are left behind. A basic petrophysical evaluation was performed incorporating the data recorded behind casing in each of these wells. Based on the analysis of cased hole formation evaluation results, the un-depleted intervals were commercially exploited adding reserve to the asset.