

Case study: Offshore Indonesia

HC-Vision service analyzed, identified oil and gas zones with minimum logging data

In 2018, an operator drilled a production well in offshore Indonesia. At the time, wireline data was not recorded because of the inability to get the logging tools past several tight spots in the well. The only option for identifying producing hydrocarbon zones was to use existing mud gas data consisting of C1 to C5, rate of penetration, and total gas. This information was crucial to identify the presence of hydrocarbons, changes in fluid type, as well as provide a qualitative formation evaluation.

The customer contacted Baker Hughes to provide a thorough analysis of the data to pinpoint exact locations in the formation. Baker Hughes suggested the **HC-Vision™ reservoir characterization service**. The service provides critical indicators of wellbore hydrocarbon type plus volumetrics such as saturations, porosity, and permeability index. These indicators deliver answers about the reservoir's fluid type, productive or nonproductive zones, potential fluid contacts,

reservoir compartmentalization, and natural fractures.

Using the HC-Vision service and the data gathered by the gamma ray run, Baker Hughes engineers were able to distinguish between production oil and coal zones within a fluvial deltaic sequence. A total of 39.4 m (129 ft) of net pay was identified from the mud gas data consisting of 12 oil zones across two wells.

The result is an interpretation based on a source independent from the formation evaluation logging data and can be provided in near real time.

During a subsequent cement bond logging run, a cased-hole gamma ray was recorded and used to correlate with the HC-Vision results.

With the oil-producing zones identified, the customer was able to target the appropriate areas within the formation, eliminating the guesswork and saving rig time and associated costs.

Challenges

- Distinguish oil zones that are able to be produced from within a sequence of thin sand beds
- Acquire data ahead of wireline logging or in the event wireline was unable to be acquired

Results

- Identified at least 12 oil zones across 2 wells independently on openhole logs
- Results were provided in near real time
- Distinguished between oil and gas in well without any formation evaluation (FE) logs