

Offshore Quick Value Assessment (QVA[®])

Case Study

Overview

A very large offshore oilfield operated by a National Oil Company (NOC) was discovered in the 1960s and covers an area of 15,000 acres (60 km²). It is located in water depth of 50 meters. The primary productive formation is Mesozoic carbonate with gross thickness of about 150 meters. The field has 3 productive formations between depths of 3,000 meters to 3,500 meters. A total of 50 wells have been drilled in the field to date. About 20 wells are currently active, 20 wells are shut in, and 10 wells have been plugged and abandoned. Cumulative production is more than 200 million barrels of oil equivalent during 50 years of production history.

iStore Role

iStore was commissioned to work with the NOC asset team to assist in quickly reviewing this field and evaluating the remaining production and reserves potentials of this mature oilfield using its Quick Value Assessment (QVA[®]) proprietary software and the technical consulting expertise available to iStore. The study was completed in three months by a joint multidisciplinary team of experienced engineers, geologists, geophysicists, petrophysicists, and data managers from the NOC and iStore. The installed software directly accessed corporate and asset level data sources required for the study and enabled the QVA study in a short time frame.

The QVA® study resulted in the following key observations:

- The primary producing formation was faulted and different fault blocks were not pressure connected.
- Some fault blocks experienced pressure support due to natural water drive from an active aquifer, and other fault blocks were experiencing pressure drawdown.
- Reservoir pressure in some fault blocks was nearing bubble point pressure and pressure maintenance programs needed to be initiated.
- Many wells were not drilled through the entire formation and considerable reserves remained in the lower undrilled portions of the reservoir.
- The size of the field was larger than currently mapped, as the productive limits extended beyond the current limits of the field.
- Recompletion opportunities were identified in the majority of the shut in wells.
- Hydraulic fracturing with proppant and horizontal wells were recommended to recover oil from tighter portions of the primary producing formation.
- A shallower formation with significant reserves potential was identified. The formation had lower porosity and permeability and would require hydraulic fracturing with proppant and/or horizontal drilling for optimum recovery.
- The presence of a regional source rock was identified in the field. The formation contained local porous zones and recommendations were made to test the intervals.
- Recommendations were made to fully integrate available seismic data with subsurface information for improved interpretations in the field.
- Original oil and gas in place values and remaining reserves were larger than originally projected.
- Recommendations were made to achieve better data quality and data completeness for analysis and ongoing operations of the field.

The NOC elected, on the basis of this work process, to initiate the following actions:

- Offer this field for a service contract to qualified operators.
- Enable contract negotiation based on the findings of the QVA® study.