

Integrated Risk Assessment to Unlock Ahmadi Formation Potential of Awali Field

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ABSTRACT

Ahmadi formation consists of two thin carbonate reservoirs with total thickness of 18', bounded by two major shale units. The Ahmadi is one of the most difficult reservoirs to develop in Awali field, as it has a tight matrix with low permeability and complex fracture/fault system. Drilling horizontal wells in such a thin formation has always been a challenge due to minimum reservoir thickness and geo-steering complications. As a result the possibility of losing costly Bottom Hole Assemblies while drilling is highly anticipated. In order to help assess and manage any production growth portfolio; Tatweer Petroleum has tailored a new Integrated Risk Assessment process. This new practice has played a major role in unlocking the potential reserves in the Crest area of Ahmadi formation.

Historically, developing the Crest of the Ahmadi used to be considered risky due to the possible gas migration from the Mauddud gas injection project that has been active since the 1930's. Furthermore, drilling such risky wells has become more challenging due to operational and logistic issues (e.g. Poor seismic quality, Drilling in well congested areas targeting other formations, Limited surface locations).

Recently Tatweer Petroleum started to investigate the Mid Flank area potential and cautiously encroach towards the Crest of the structure by drilling short lateral horizontal wells (average 2,000 feet). This would have not been possible without the comprehensive and integrated cross-discipline risk assessment that is carried out for every well. As a result, in 2015, twelve wells have been drilled in the Mid Flank and Crest; each one of them has initially produced over 1000 BOPD which was not achieved historically in this reservoir.

The paper will cover the following key points:

- * Process of the Integrated Risk Assessment.
- * What has been done differently to unlock those reserves in terms of opportunities identification, seismic data analysis, well planning, drilling and completion & stimulation new practice.
- * Share the production results of the Ahmadi crest area drilling campaign.