

## **Lean Hydrocarbon Maturation of Upper Shuaiba Play in North Oman. Standardization, Replication and Aggressive Appraisal to Accelerate the Development**

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### **Abstract**

The Upper Shuaiba Formation was deposited as a series prograding clinoforms on the side of the Bab basin. They comprise thick rudist build-ups, high-energy oolitic grainstone shoals and thin restricted miliolid oolitic grainstone sheets, and are around 800 – 1000 meter wide, over 10 kilometers long, 5 to 25 meters thick and have high net-to-gross ratios. The clinoform's reservoirs are separated by non-permeable argillaceous facies, forming stratigraphic traps below the Nahr Umr unconformity. The lateral extent of the reservoirs, the distribution of good quality reservoir, the heterogeneity and impact of fractures remain as the key uncertainties.

The Upper Shuaiba is proven to be oil bearing over a large area of in the North Oman. Currently two areas are in production with one more area in execution phase. Over the last 15 years, the Upper Shuaiba play was appraised and developed in a piece meal approach without a holistic view of the possible size of the asset and the long term development strategy. This led to inefficiencies: for example multiple handovers from exploration to development, development sequence not optimized for value, inefficient field development planning, concept selection, design work and long lead times for follow up expansion projects in the operations phase.

It was realized that a lot of the work in the Select, Define and Operate phase was unnecessarily repeated and could be copied from previous work and standardized. It was shown that lead times between discovery and development can be reduced substantially if the business requires it. Moreover, follow up expansion projects will take 1 year instead of 3 years before. It is estimated that around 60% of the engineering man hours (selection, design and execution) can be saved. The project strategy relies on a high degree of standardization and replication, adopting successful development parameters from other analogues developments as standards, and project acceleration resulting from the subsurface and surface facility efforts being decoupled and progressed in parallel.

Standard Field Development Plans are matured by devdividing the large area into reservoir types. These reservoir types are identified earlier by a heavy appraisal campaign. These "Standard FDPs" will prescribe a standard approach for development of each reservoir types in regards to the main development decisions which need to be taken. Execution Field Development Plans will then be written to apply rules from the Standard FDPs and remaining development decisions. A workflow will be followed from the Discovery/ Appraisal toward the final FDP for specific areas.

In the presentation, we will show how the large area was segmented into appraisal areas and development areas, a workflow from drilling the 1st appraisal well in an area to final development , minimum volumes and data acquisition needed to develop the area and how to implement the Standard FDPs.