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The PDO Gharif Field Development and Integration Catalogue: Data Driven Decision Making

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ABSTRACT

Reservoir's can be modeled in a multitude of different ways, from detailed static models containing millions of cells to complex physics flow simulations. Often simpler methods are overlooked in the quest for detail, but simple analytical models or empirical models based on large observed datasets can often prove fast accurate companions to our 3D integrated reservoir models. Here we present PDO's Gharif Field Development and Integration Catalogue, a tool which aims to streamline the development of PDO's Gharif opportunities by drawing upon the large datatset at our disposal with the objective of making faster better quality decisions.

The Gharif formation is a prolific member of the Haushi Supergroup which extends across the Sultanate of Oman. PDO's concession area contains approximately 70 fields producing oil and/or gas from the Gharif formation. Production began in the 1970's with over 1000 production wells drilled to date. This rich dataset has been analysed, interpreted and integrated in the Gharif Field Development and Integration Catalogue for use in studies.

At the heart of the Gharif Field Development and Integration Catalogue is a field development workflow which guides the user through the steps of developing an opportunity: from the identification of analogues, subsurface and surface decision making, production prediction, and finally economic screening. This workflow is grounded in the data of the past as users constantly benchmark their development assumptions against past data and experiences.

The field development workflow is complimented by technical databases and tutorials. The technical databases contain data types required by PDO's numerical and analytical modelling tools. For example, porosity-permeability data and trends from PDO's 3.5 km of Gharif core is available alongside geological object variograms for use in static models. The tutorials contain detailed guides on Gharif correlation and sequence stratigraphy.

An example of a study that has utilized the field development workflow is presented. We show how production predictions from numerical and analytical models can be combined with historical well performance data in order to quickly generate realistic high confidence production promises on which development plans can be based.