

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

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Contribution of the 3-D Seismic Data in the Development of Producing Fields in Tunisia, North Africa

A century of exploration activity in Tunisia, results in more than 60 oil and gas discoveries. Reserves are spread over a wide range of reservoirs and play types identified in four main petroleum provinces. Development plans of these fields have been initially designed using 2-D seismic data. Dry development wells and production decline are common problems faced in the management of these fields. Maps generated from 2-D seismic data are no longer reliable: 2-D seismic have improperly and or incompletely imaged structures. In order to improve the implementation of development wells and increase the ultimate recoverable reserves and production, 3-D seismic surveys were acquired over the largest Tunisian oil and gas fields. The use of the 3-D seismic technology has considerably improved the subsurface imaging of the structures in terms of architecture and fault patterns. Complementary and precious data of the reservoir characteristics especially for fractured reservoirs are generated by the seismic attributes and integrated in the geological model. As a result, readjustments in the development drilling strategies in terms of locations and paths (horizontal wells) have been conceived and significant improvements of the fields performance have been achieved. To illustrate the improvements gained by acquisition of 3-D seismic surveys on the reservoir management, the drilling program and thus in the whole development plan, a selection of Tunisian producing fields from different types of reservoirs are presented and discussed in the following paper. In particular, focus will be placed on fields producing from fractured reservoirs both carbonate and siliclastic and on the analysis of seismic attributes.