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FULL LENGTH ARTICLE

Detection of sedimentary structural elements using formation micro imager technique, a case study from South Mansoura-1 well, Nile Delta, Egypt

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Abstract A detailed structure and sedimentology interpretation was performed for the South Mansoura-1 well. The Formation Micro Imager (FMI) is recorded and interpreted over the interval 9100–8009 ft. This interval belongs to Sidi Salem and Qawasim Formations. Based on azimuth trend of manually picked dips (bed boundaries), the interval can be divided into 4 structural dip zones (Zone 1 (9100–8800 ft), variable azimuth direction with the major trends mainly to SW&NE; Zone 2 (8800–8570 ft), bedding dip azimuth is mainly to the NW; Zone 3 (8570–8250 ft), bedding dip azimuth is mainly to the NE; and Zone 4 (8250–8009 ft), bedding dip azimuth is mainly to the NW). Lamination identified over the interval shows a dominant dip azimuth trend toward North North-West direction. The interbedded shale units are highly laminated and show little evidence of bioturbation. Sand exhibits abundant cross bedding showing a dominant dip azimuth trends toward NNE and NE and more locally to the E. Sixteen truncations identified over the interval show variable azimuth trend with the major trend mainly to the North North-West.

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1. Introduction

The Nile Delta province is the focus of an extensive integrated reservoir characterization effort in the gas – discoveries of

Egypt. It has witnessed a rigorous and successful exploration campaign during the last few years. This could be attributed to the fact that the province started to reveal part of its hidden hydrocarbon reserves as a direct result of using state-of-the-art exploration techniques, in addition to the expanding use of different types of geological and geophysical modeling (EGPC, 1994).

South Mansoura-1 well was drilled vertically with an 8.5" bit size (Fig. 1). The well was logged with the Formation Micro Imager (FMI) tool over an interval of 9100–8009 ft. This interval is subdivided into two intervals; the first from 8009 to 8573 represents Qawasim Formation and the second one from 8573 to 9100 represents Sidi Salem Formation (Fig. 2). The Sidi

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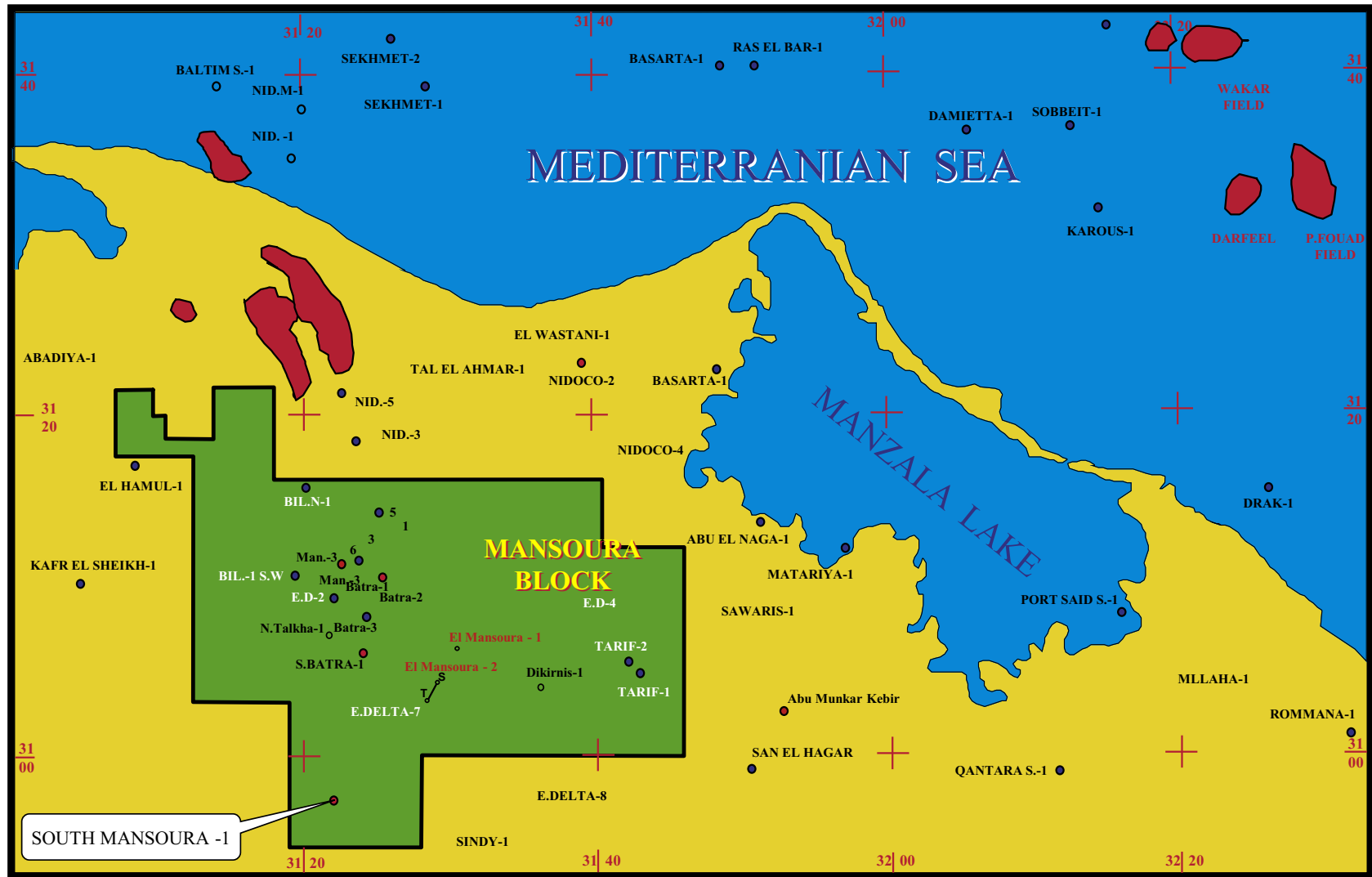


Figure 1 Location map of El Mansoura concession shows the studied well (modified after Mansoura Petroleum Company, 2006).

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