EW05

Stratigraphic Trap - Al Khalij

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SUMMARY

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The Al Khalij oil offshore field is located in Block 6 of the Arabian Gulf at about 60m water depth, about 40 km North-East of Halul island. The field was discovered in 1991 and has been developed through three successive phases by Total E&P Qatar (100%). Al Khalij field produces a 28° API oil from the complex Upper Mishrif Cenomanian carbonates, deposited in shallow environment. This limestone reservoir consists of thin reservoir beds (rudist banks deposits and shoal fringes with thickness generally lower than 5m), interbedded with tighter layers (lagoonal muddy facies).

The trap is a complex combination of three parameters. First of all, the tilted structure, gently dipping to the South East is eroded and capped by the overlying Laffan Shale at the top and to the North. Secondly, the lateral western closure is provided by a complex interaction of rapid lateral facies change calibrated by western exploration wells combined to lateral variation in diagenesis. Moreover, hydrodynamism generate a tilted oil water contact dipping toward the north-east which allows the closure on the western closure.

This complex trapping story has been finally integrated in a geological model which allows an optimized reservoirs managements.