

Will K: Another Step in the Evolution of the U.S. Gulf of Mexico Deep Gas Play

Blankenship, Cynthia L.¹; Rainey, David I.¹; Knight, Debbie H.¹; Kercho, Debbie A.¹; Benthien, Ross H.¹; Hargrove, Kenneth¹; Klein, Robert T.¹ (1) BP America Inc, Houston, TX.

The recently completed Deep Gas exploration well Will K (High Island A119 #1) is a key test of the GoM Shelf Paleogene play. Deep Gas is characterized by a number of plays of different stratigraphic age, generally below a regional salt weld. These plays share the technical challenges of extremely high pressure and temperature, and the key risks regarding reservoir. Several years of regional and sub-regional technical work led to the choice of drilling the Will K prospect to test the resource potential of the Paleogene El Dorado basin.

The Will K prospect was drilled as a large 4-way structure with multi-TCF potential and substantial follow-on prospectivity. In addition, it is well positioned to test the key play risks of reservoir quality and reservoir presence. Target depths range from 22,000' to 28,500'. All of the drilling objectives of the well were met, including obtaining a 90 foot heads-up core.

Many challenges had to be overcome to drill a well of this magnitude. With a TD of 28,404', Will K is the second deepest well on the shelf and took 461 days from start to finish. It is the highest combination pressure-temperature well drilled in the GoM, and required 8 casing strings (total weight 8 million pounds) and over 40 serial #1 pieces of equipment. The materials and tools used for this well (drilling, mud, cement, logging, coring, etc.) were pushed to their limits. Emerging technologies, such as managed pressure drilling, were also successfully employed and were critical to reaching TD.

Will K is further proof that industry can drill deep, high pressure, high temperature exploration wells safely and efficiently. If history is a guide to the future, the technology to evaluate, test and produce these wells will advance just as deep water production technology has. Deep Gas carries substantial resource potential, and can be attractive economically due to low facility costs compared to deep water, and high expected rates and reserves per well compared to onshore. Implications of Will K for the Deep Gas plays will be discussed.