

Evolution of the WOLFBONE

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ABSTRACT

In mid-2009, while at Patriot Resources, a small group of us began comparing the similarities (and differences) between the stratigraphy of the Spraberry and Wolfcamp (Wolfberry) in the Midland Basin to the Bone Spring and Wolfcamp (future Wolfbone) in the Southern Delaware. This seems obvious now, but in 2009, there were few, but, scattered logs throughout the Southern Delaware (SDB) (with any real, useable data) to make this comparison. The biggest comparable data set between the two basins existed in the historical mudlogs. As in the Midland Basin, where vertically scattered shows existed throughout the southwest portion of the Basin that led Henry Petroleum to begin testing the Wolfberry idea, the Delaware Basin mudlogs exhibited similar attributes – mostly gas shows, increasing throughout the stratigraphic column, until the operators from the 50's, 60's & 70's would finally have to stop and run an intermediate string of casing, to continue on to their deep targets. There were also numerous “uneconomic” Wolfcamp completions scattered throughout the SDB, which were mostly “bail-out” zones from deep dry tests. Along with these “shows”, there were several historical conventional Wolfcamp fields – Phantom, Maralo...

In 2008-2009, Chesapeake was exploring for Barnett along the western edge of the SDB and bailed out into deep Wolfcamp Sands (correlative to Wolfcamp C or D in today's nomenclature) in 3-4 wells. These Chesapeake wells, while only completed in the deepest portion of the Wolfcamp, were helpful in developing the Wolfbone model.

In Mid-2009, Patriot approached J. Cleo Thompson about testing the idea of a multi-stage vertical completion including the Wolfcamp and Bone Spring. Prior to this meeting, J. Cleo had been exploiting the 3rd Bone Sands on their existing acreage. Subsequent to our meeting, J. Cleo completed the first true Wolfbone test - the J Cleo Thompson, Terrill State #1, a re-entry of a deep, dry hole, located 11-12 miles South of Pecos in Reeves County. Its first full month of production (Oct. 2009), averaged 150 BOPD. After the success of the Terrill State, J. Cleo re-entered 2-3 others, mostly with success, and shortly after that, J. Cleo and Patriot began putting together a sizeable acreage position, mostly East and South of the Terrill State. At this time, leasing was cheap – less than \$400 per acre. In fact, we capped our acreage pursuit, leaving behind any acreage in excess of \$400 per acre. It wasn't until 2010 that drilling picked up, but by the end of 2010, roughly 90 Wolfbone wells had been drilled. By this time, a handful of other operators had joined in, including ExL, Atlantic, Eagle, and Concho. By the end of 2011, 300 new wells had been drilled and/or completed, and towards the end of 2011, the SDB began to see some of the first horizontal Wolfcamp wells (the Northern Delaware Basin, mostly in New Mexico, was ahead of the SDB with regards to exploiting the Wolfcamp horizontally). These two plays have now grown together, extending from New Mexico, south through Reeves, Ward, western Winkler, Loving and into Pecos County. All told, since 2009, there have been 2,900 wells drilled - 1,200 verticals & 1,700 laterals, and there are 850 permits throughout the play.