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Snubbing Unit Enables Rapid Workover Completion for Live Liquid E/P Cavern

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Abstract

Mid-Continent Fractionation & Storage, LLC (Williams) has successfully completed the first workover in a Kansas liquids storage cavern to utilize snubbing for pressure control. This technique permits work to proceed with product in the well, avoiding both delays for product removal and the period when cavern pressures are reduced to brine gradient or below. The traditional method of working a well over is to remove all liquid hydrocarbons, completely depressurize all liquid/vapor product, and maintain a brine full state. Once the cavern has reached this status, a workover unit is mobilized, the brine tubing is removed, necessary compliance logging is performed, and the brine tubing is placed back into the well. Depressurizing the cavern can take an extended amount of time and has the potential to cause excessive strain on the cavern roof causing casing or roof failures due to these pressures. Employing a snubbing unit is an innovative means to mitigate the need for completely depressurizing a cavern. While the potential benefits associated with this strategy were great, there were a number of unique challenges, including the need to isolate the tubing; the weight on the wellhead; BOP design; liquid product invasion; and the management of oversized equipment.

Ultimately, the use of the snubbing unit for a workover on a liquid storage cavern proved successful. This paper will provide an in depth look at this process and explore the challenges met and innovative activities required to make it a successful endeavor.

Key words: Bedded Salt Deposits, Caverns for Liquid Storage, Regulations, Storage Cavern, Well Casing, Well Design, Snubbing, Cavern Roof Damage

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