

A Zero-Flaring Flowback Solution to Revive Liquid Loaded Gas Wells

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Abstract : Hydrocarbon production decline in mature gas fields is inevitable, and mitigating these circumstances is essential to ensure a longer production period. Production decline is not only influenced by reservoir pressure and wellbore integrity; however, associated liquids in the reservoir rock have a considerable impact on the production process. The associated liquid may result in liquid loading, near wellbore damage, condensate banking, fine sand migration, and wellhead pressure depletion. Consequently, the producing well will suffocate, and the liquid column will seize the well from flowing. A common solution in such circumstances is reducing the surface pressure by opening the well to the atmospheric pressure and flaring the produced liquids. This practice may not be applicable to many cases since the atmospheric pressure is not low enough to create a sufficient driving force to flow the well. In addition, flaring the produced hydrocarbon is solving the issue on account of the environment, which is against the world's efforts to mitigate the impact of climate change. This paper presents a novel approach and a case study that utilizes a multi-phase mobile wellhead gas compression unit (MMWGC) to reduce surface pressure to the sub-atmospheric level and transfer the produced hydrocarbons to the sales line. As a result, the liquid column will unload in a zero-flaring manner, and the life of the producing well will extend considerably. The MMWGC unit was able to successfully kick off a dead well to produce up to 10 MMSCFD after reducing the surface pressure for 3 hours. Applying such novelty on a broader scale will not only extend the life of the producing wells yet will also provide a zero-flaring, economically and environmentally preferred solution.

Keywords : petroleum engineering, zero-flaring, liquid loading, well revival

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