DEVELOPMENT OF A DOWNHOLE SEPARATOR AND INTENSIFIER FOR COILED TUBING JETTING

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ABSTRACT
Wells often build scale deposits on the inside of their tubulars that can impede production or interfere with a workover operation. When this scale buildup is over long intervals, coiled tubing (CT) is often the conveyance system used to deliver either acid, drilling or jetting technologies to remove the scale. Acidizing though coil can be effective only if the scale is acid soluble and it can be expensive. Drilling with motors can be very effective, but motors are susceptible to performance issues, especially if high nitrogen ratios are required. Jetting the scale is possible, but this technology also faces challenges. Delivering sufficient downhole hydraulic pressure to overcome the scale's threshold pressure is very difficult due to the limited pressure capacity of CT and frictional pressure losses in long CT strings. Further, if nitrogen is required to ensure returns, the gas phase quickly disperses the fluid jet as it exits the jetting tool, and very little power is delivered to the scale face.

Recent technical advances in CT jetting technology include a rotary separator to separate the nitrogen from the fluid and a downhole pressure intensifier to take the separated water and increase the hydraulic pressure delivered to the jetting tool.

The paper first discusses the measurement of the threshold pressure required for removal of oilfield scales. The development of a gas separator and downhole intensifier are discussed next, followed by the results of testing these tools.

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