

Well Control Case History

Texas Gulf Coast Well Integrity

This case history details well integrity issues for a well pad located along the Texas gulf coast that included four problematic wells. All four wells on the pad were scheduled for Plug and Abandonment (P&A) operations.

The following is a brief recap for each well on the pad.

- **Well A:** The initial well that was to be plugged. The well had a Shut-In Casing Pressure (SICP) of $\pm 3,400$ psi on the tubing and three casing annuli, including the surface casing.
- **Well B:** A SICP of $\pm 2,100$ psi was noted when BE personnel were requested to assist. Well was suspected to have a Coiled Tubing (CT) velocity string but had minimal information included in the well file. The size and configuration of the CT was unclear.
- **Well C:** Shut-in surface pressures were noted as high as $\pm 5,200$ psi on the tubing and production casing. The well would flow water with an initial gas head down to ± 100 psi but would recover to the shut-in pressure rapidly.
- **Well D:** Surface pressures of $\pm 2,600$ psi were noted on all casing strings and the tubing. Pressure would not bleed off and multiple valves on the wellhead were not functional.

Event Description

The initial attempts to kill Well A by the P&A crew were unsuccessful. A Coiled Tubing (CT) unit was rigged up in order to attempt to run in the hole and kill the well from bottom. The CT unit was not able to get to a sufficient depth and gas was noted in the cellar area (bubbling in the cellar). Operations were immediately suspended and a well control vendor was contacted. Operations ensued to remediate the wellbore issues with the use of a snubbing unit. These actions were eventually suspended due to high costs and little progress made towards resolution. All vendors were released and Blowout Engineers (BE) was asked to assist with planning and operational execution.

Operations

BE was immediately involved in the planning phase to continue plugging operations after the suspension of the previous efforts. Well A had up to $\pm 3,200$ psi on

all casing strings throughout the initial attempts to plug the well. BE personnel were able to get the well bled off and open to atmosphere without flow for an extended time. It was important to establish this trend for assessment purposes and to facilitate continued plugging efforts in a cost effective manner.

BE personnel were tasked to assist with the planning and plugging of Wells B, C and D, which also had serious well integrity issues with pressure on multiple strings as described. The upper section ($\pm 1,800'$) of the CT velocity string found in Well B was recovered and found to be heavily corroded. It is believed the CT had previously failed before attempting to pull the string due to the extensive corrosion in the string. The pressure was stable on Well B allowing for pressure monitoring to continue until further equipment could be secured to complete the plugging program

Wells C and D were effectively plugged without incident or further issue.

BE was able to assist the client with the development of a cost-effective long-term strategy for managing the wellbore pressures on Well A until market conditions improve and remedial efforts are resumed. This allowed the client



to minimize equipment rentals and personnel until the remediation and plugging process was resumed.

Well Integrity Highlights

BE was able to assist the client with the following

BE developed a long-term solution to manage the wellbore pressures that was safe and cost-effective.

BE planned and executed the project with substantial costs savings compared to other service providers.

BE assisted with efforts to fully plug two of the four wells on the pad at fractions of the cost to the previous operations.