

FIT Procedure

- HPR will perform an EMW test to simulate a 25 BBL gas kick while drilling. The results of the EMW test are expected to demonstrate adequate formation protection at the current surface casing set depth of 820-830' MD.
 - The EMW test will be conducted according to the following parameters:
 - Standard Drilling Mud Weight = 9.2 PPG
 - Hydrostatic PSI @ surface CSG shoe = $9.2 \text{ PPG} \times (820' + 10') \times 0.052 = 397 \text{ psi}$
 - Simulated 25 BBL Kick at 78 PSI or 1.8 PPG over standard Mud Weight = 11.0 PPG MW
 - Calculated pressure at the surface casing shoe with 25 BBL gas kick = $11.0 \text{ PPG} \times (820' + 10') \times 0.052 = 475 \text{ psi}$
 - Expected formation breakdown pressure = 820 psi (assuming 1 psi/ft formation gradient)
 - The EMW test simulating a 25 BBL gas kick yields a calculated pressure of 425 psi. This pressure is roughly half of the expected formation breakdown pressure (820 psi), therefore the surface casing set depth is sufficient.
 - The results of the EMW will be provided to the state for final review.
- For future two-string wellbore designs, HPR will set surface casing to a minimum measured depth of 1500'.
- Each well is equipped with a 5,000 psi rated wellhead (welded to the 9-5/8" surface string), along with a 3,000 psi rated BOP.