

# HEAL SYSTEM™ GAS-ASSISTED START-UP

**SCOPE** This procedure is required to pre-charge the wellbore to a high gas-to-liquid ratio by displacing wellbore fluids back into the formation with gas injection (N<sub>2</sub>, CO<sub>2</sub>).

**BEFORE YOU BEGIN** Make sure surface equipment is commissioned and ready for operations. Interruptions in operations after gas-assist may kill flow up the Sized Regulating String (SRS) and reduce the desired results significantly.

<p><b>STEP 1</b></p>	<p><b>DETERMINE VOLUMES AND RIG UP FOR GAS-ASSIST</b></p> <p>Determine the volume of gas to be injected (estimated at 2x hole volume). This volume is calculated to displace fluids from the annulus, the SRS and the horizontal wellbore into the formation.</p> <p>Ensure maximum allowable pressures are clearly defined.</p> <p>Rig in to inject gas down production annulus.</p> <p>Close the tubing valve during gas injection.</p>	<p><b>STEP 2</b></p>	<p><b>INJECT GAS</b></p> <p>Inject gas to the determined volume.</p> <p>Do not exceed wellhead, production annulus or formation breakdown pressures.</p> <p>Continuously record injection pressures.</p>
<p><b>STEP 3</b></p>	<p><b>FLOW BACK</b></p> <p>Rig up production annulus to flow back. Flow gas with as little back pressure as possible, ideally to atmospheric pressure. This may require testers or use of a rig tank.</p> <p>When production annulus pressures stabilize during flow back, at low pressure proceed to Step 4.</p>	<p><b>STEP 4</b></p>	<p><b>START PUMP JACK</b></p> <p>Once formation gas is observed, or fluid is over the BHP start pump jack at a slow rate (half of planned stroke rate).</p> <p>If possible, start the pump jack on a slight tap as the fluid will be foamy risking gas lock.</p> <p>Proceed to HEAL System start-up, Step 2.</p> <p>Avoid interruptions once the pump jack has been started.</p>

