



ROCKIES REGION

VENTLESS FLOWBACK IMPROVES SAFETY AND SUSTAINABILITY TARGETS FOR MAJOR OPERATOR

The Challenge: A customer focused on safety and sustainability identified three potential issues during flowback and well testing operations—the need to reduce hydrocarbon venting, hydrocarbon exposure to staff and the environmental impact of flares. At the time, regulation in the region restricted flaring for non-exploratory wells. Visible flares from a nearby interstate could potentially impact traffic conditions, particularly at night. Venting from gas-driven mechanisms, incomplete flare combustion, and open-top tanks could increase the risk of exposure to benzene and other hazardous materials. We made the decision to develop end-to-end capture and management of gas vapors to address these issues and further the customer's sustainability goals.

Select's Solution: Starting from the wellhead, Select identified various venting sources that required capture including emergency shut-in valves, purge valves, and open-top tanks. Combustor efficiency and selection would be evaluated based on true gas composition returned from the formation as opposed to propane, and other factors including residence time, flow rate and heat index. Combustor units would be designed to obscure the visibility of the flame and provide adequate residence time to achieve the required thermal index for a safe, efficient and effective burn.

Shut-in valve exhaust ports were fitted with stainless steel lines plumbed in parallel to the sales line or combustors. Test separators with liquid level controllers typically required thief bottle powered float switches. At 80 psi these switches represented a minor release when initiated. Non-entrained or ventless valves were installed to eliminate released gas and exposure to elevated levels of benzene near meters frequently checked by field workers. Standard frac tanks typically have a 1psi limit and required engineered modifications, including reinforced walls, sealed

hatches, level monitors, and plumbed pressure release valves. Multiple tube combustor units were deployed with automated valves to adjust for low volumes and maintain the required r-value. Combustion units were independently evaluated with thermal imaging technology and other test methods to verify the complete combustion of hydrocarbons (>99% efficiency). The enclosed unit also acted to obscure the luminance of the flare to the public on the interstate.

Value Created: The ventless production design represented a significant paradigm shift for both Select's and the customer's operations. Select provided the critical support and transparency needed for operations to fully adopt the new production equipment and methods by authoring improved SOPs and training. The safety measures and advances in sustainability became a model used by local and state regulators and set the standard for improving ventless operations in the region. The monitoring and capture of gas provided new sources of trackable data to the operator as well as the potential for sellable hydrocarbons, while maintaining a safer work environment for both staff and present wildlife.