

Dynamic Parameter Analysis: Analyzing Collective Behavior of Microseismic Events for Differentiation Between Hydraulically-Linked and Stress-Driven Seismicity

Abstract

When designing treatment programs, spacing and treatment parameters must be optimized to maximize the overall effectiveness of the stimulated system. Advanced monitoring and analysis techniques can provide valuable insights into how a system responds to different design configurations. High-resolution analysis methods focus on patterns of collective activity rather than individual events, allowing for a clearer understanding of the underlying mechanisms driving system behavior. In this study, high-resolution analysis is used to evaluate the extent of connected or influenced zones and to assess how variations in treatment spacing and size affect system performance. The results show that increasing treatment intensity does not necessarily produce a larger connected response, and that allowing greater spacing or recovery time between treatments can enhance the desired effect within the target region.

Biography

Eddie Barrow is the Manager of HFM Analytics for ESG Solutions, where he leads a team of data analysts in high quality processing of microseismic and tiltmeter data for hydraulic fracture monitoring. With 7 years of experience, he specializes in using various techniques to characterize the subsurface rock formations, optimize well placement and stimulation design, and monitor the fracturing process in real-time. Eddie's work helps maximize the efficiency and safety of oil and gas operations.

Eddie is a graduate of the University of Manitoba with a Bachelors of Applied Science in Geophysics and Seismology.