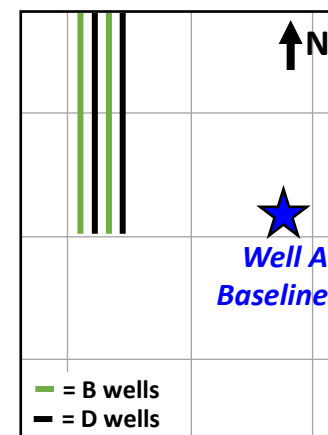


Case Study 3: Testing Frac Barriers using Production Allocation (PA) and Similarity Index (SI)



Challenge: Operator needed to understand if petrophysically identified frac barrier was behaving as a flow barrier and understand how drainage and targeting is affected.

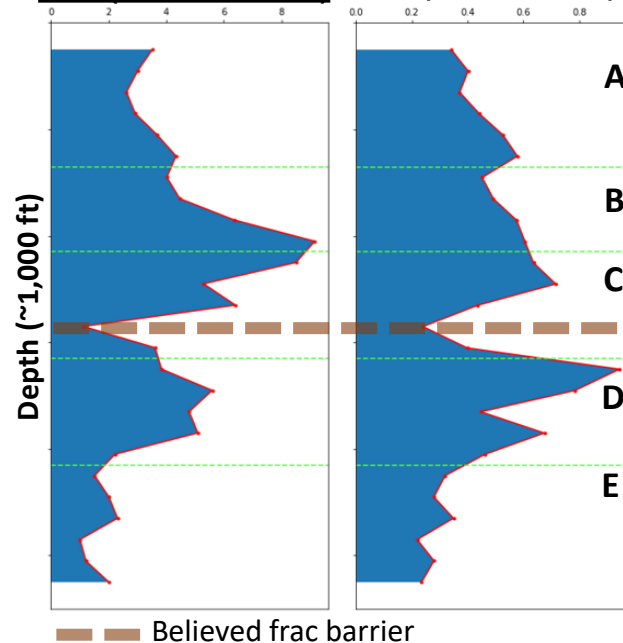
Process: 1) Cuttings from offset well, and separator produced oils from Pad 1 wells, were collected; 2) Geochemical fingerprint of oil extracted from the cuttings, and produced oils, were collected; 3) A regression model was built to allocate the produced oil back to its producing zone and calculate drainage frac height based on the geochemical fingerprint data

RCI, PA & SI Results

- RCI identified potential flow barrier, having low OIPI & RQI
- **The flow barrier is an effective barrier for wells targeted below it, while wells targeted above it see some contribution from below the flow barrier** even after 6 months of production possibly enabled by proppant settling below the wellbore into this believed flow barrier interval.
- **Vertical cross-drainage reduces through time** shown by PA & SI. Higher SI occurs early after POP, indicating B & D drainage is more similar in early production, but less similar by 6 months of production. Indicating, **wells are spaced appropriately.**

Well A Baseline RCI

OIPI (Oil Saturation) RQI (Matrix Perm)



FDFC (Fitted Drainage Frac Curve)

2 Weeks After POP

6 Months After POP

