



San Joaquin Geological Society

Date: Tuesday, Nov 12th, 2024

Time: 6:00 PM Social Hour
6:30 PM Dinner
7:00 PM Lecture

Place: American Legion Hall
2020 H Street, Bakersfield, CA 93302

PSAAPG Members

\$35 with reservation
\$40 without reservation

Non PSAAPG Members

\$40 with reservation

Full-time Students with ID

FREE!

*** RSVP ***

**By: noon Monday,
Nov 11th, 2024**

Register online:

<http://www.SanJoaquinGeologicalSociety.org/>

Pay online *or* cash/check at
the door

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2024-2025

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Compartmentalization affecting Immiscible Gas Injection in the Etchegoin Formation at Fault Block 7A of the Eastern Shallow Oil Zone in the Elk Hills Field, Kern County, California

Presented by: Ryan Glauser

Abstract: This study aimed to determine the compartmentalization of fault block 7A concerning the bounding faults and horizontal interzonal shales. Shale Gouge Ratio (SGR) analysis was performed on the bounding fault planes in a deterministic 3D geologic model generated from publicly available data. Modeled SGR values were correlated to fault breakthrough pressures from analogous faults to determine theoretical maximum cross-fault pressure differentials for the bounding faults. They were compared with observed cross-fault pressure differentials resulting from immiscible gas injection to evaluate fault sealing potential. Bounding faults were found to have an SGR range of 6-37% and theoretical cross-fault pressure differentials of 5.4-119.8 psi. Observed pressure differentials were determined to be 5.4-16.5 psi, consistent with the minimum theoretical pressure differential values indicating the faults are dynamically sealing barriers/baffles. The cross-fault juxtaposition of dissimilar reservoir fluids confirmed the fault seal. Mapping of interzonal shale isopaches and vertical comparisons of reservoir fluids determined that the producing zones are vertically isolated. SGR is a viable method for quantifying fault seals and could be implemented in a containment study to meet UIC project requirements for any fluid injection. However, additional supporting proof of fault seals is required.

Bio:

Ryan Glauser graduated from California State University Bakersfield in 2010 with a Bachelor of Science in Geology. He started his career as a geologic technician and became a development geologist in 2014, with 13 years of experience in the petroleum industry. He primarily worked on evaluating, modeling, and developing thermal diatomite and sandstone reservoirs. Ryan returned to CSUB in 2022 to pursue a Master of Science in Geology and graduated in the Summer of 2024.

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