



San Joaquin Geological Society

Date: Tuesday, November 14, 2017

Time: 6:00 PM Social Hour
7:00 PM Dinner
8:00 PM Lecture

Place: Eagles Lodge
1718 17th Street, Bakersfield, CA 93302

PSAAPG Members
\$25 with reservation
\$30 without reservation

Non PSAAPG Members
\$30 with reservation

Full-time Students with ID:
\$10 - Courtesy of
California Resources Corporation

*** RSVP ***

**By: noon Monday,
November 13, 2017**

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

Pay Online via **PayPal** or at
the door

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

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Fault displacement hazards at Aliso Canyon and Honor Rancho natural gas storage fields, southern California

Presented by: Thomas L. Davis, Geologic Maps Foundation, Inc.

Abstract: Faults that have potential for future displacement (IAEA's and USNRC's capable faults) and intersect natural gas storage wells in the subsurface are a hazard to well integrity. The American Petroleum Institute's RP 1171 (API, 2015), that is guiding new rule-making for gas storage fields, states "Depleted hydrocarbon reservoirs are candidates for natural gas storage because the reservoir integrity has been demonstrated over geologic time by hydrocarbon containment at initial pressure conditions." True, but gas wells at storage reservoirs have not existed over geologic time and when wells cross capable faults there exists a hazard to well integrity, the possibility of methane leakage to the surface, and risks to public safety, the environment, energy supply, and a valuable resource. The largest methane leak in US history occurred at the Aliso Canyon Gas Storage Field (ACGSF) and demonstrated the difficulty of stopping an underground leak from one well in a pressured gas storage field, and showed the need to evaluate all hazards to gas well integrity and to estimate and mitigate the risks. At the ACGSF and Honor Rancho fields, storage wells cross the Santa Susana (SSF) and Honor Rancho faults, respectively, to reach their storage reservoirs. Both faults have had significant displacement during the last 2-3 ma, and the SSF may have a slip-rate as high as 7.0-9.8 mm/yr during the last ~700 ka. The Southern California Earthquake Data Center estimates the characteristic earthquake magnitude for the SSF to be from MW 6.6-7.3 which should produce 0.3 to 2.8 meters of displacement. Displacements of up to 0.25 meters severely damaged numerous oil wells in the subsurface at the Wilmington oil field in response to earthquakes significantly smaller than the SSF's characteristic earthquake. New Federal and State regulations should require independent and transparent evaluations of the hazard and risk of capable faults for planned and existing gas storage fields.

Biography: Davis is a geologist with interests in oil & gas exploration and field development, the petroleum potential of California, Nevada, the Indian subcontinent, and South America, active tectonics, and surface geologic mapping. In a series of published papers Jay Namson and Davis showed that the Coalinga, Whittier Narrows, and Northridge earthquakes occurred on blind-thrust faults systems, the western Transverse Ranges are a fold and thrust belt, and the west-side of the San Joaquin basin is an active convergent-wedge, and still emphasize the need for integrated subsurface and surface geology for earthquake hazard and risk evaluations. Davis has a BS and PhD from the University of California. More information at: www.thomasldavisgeologist.com and www.geologicmapsfoundation.org



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