Title: Well integrity and active faulting

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Fault movements across gas storage wells are a risk to their integrity. The Santa Susana fault (SSF) that bisects the Aliso Canyon gas storage field near Los Angeles provides a field example for workshop discussion; however, the recent large gas leak at Aliso is probably the result of casing corrosion-pending on-going investigations-and probably not due to movement on the SSF. Yet there remains a well integrity risk worthy of further consideration and evaluation due to several geologic factors: 1) The State of California recognizes, via the Alquist-Priolo Act, that the fault's eastern segment is an earthquake and fault-surface-rupture hazard based on surface displacement during the 1971 Sylmar earthquake (M_W=6.7). 2) The probability of future fault movement on any segment of the SSF is unclear due to poor surface exposure and extensive landslide deposits. Yeats (1981, 2001), using data from wells, states the SSF had at least 4.0 kms of mostly Quaternary displacement and lists the fault as active with the very high slip-rate of 7.0-9.8 mm/yr-to the west and east the fault merges with the active Oak Ridge and Sierra Madre faults respectively. 3) Many of the Aliso wells intersect the SSF at shallow depths (less than 1,000 feet), and the hanging-wall strata, that are highly-fractured, and the SSF's thick zone of fractures and smaller faults are likely conduits for gas leakage to the surface if fault movement were to shear the casing and tubing of high-pressure gas wells. Conversely, cases of fault shearing of oil and gas wells in other areas suggest the leakage risk diminishes with depth where the adjacent strata are more consolidated, fine-grained, and provide a top seal to the pinched-off well, and in lower pressure oil field settings.