Conclusions

- The Leadville Limestone in the northern Paradox Basin was deposited in open-marine shelf settings under variable energy conditions. Depositional facies determined from cores range from crinoidal shoals, peloid/ooid shoals, and small Waulsortian-type mounds.
- Late calcite spar cements may have created significant interparticle spacing, which may allow for secondary fluid flow and increased reservoir permeability.
- Some of the mapped faults cutting Lisbon field may be involved with thermal convection cells for circulating fluids during late burial diagenesis (see arrows). Some wells near faults appear to have better reservoir quality, produce higher volumes of oil, and have higher residual bottom hole temperatures than wells away from these faults.
- Oil emplaced within healed fractures in late calcite spar cements display lower homogenization temperatures, while pyrobitumen formation and sulfide mineral precipitation may be related to the high temperatures documented in compact Ca-Mg brines associated with evaporites.
- Homogenization temperatures of primary inclusions within doubly terminated quartz range from ~100°C to ~150°C. Coarser rhombic and saddle dolomite rims precipitated at higher temperatures.
- Pyrobitumen formation and sulfide mineral precipitation may be related to high temperatures documented during maximum burial, late Laramide faulting/uplift and Oligocene igneous activity.