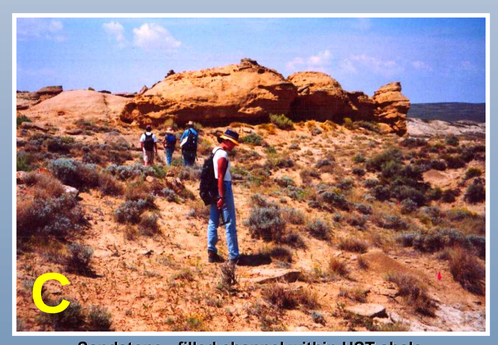
Sierra Madre Outcrop

Section 24 / 25 T16N - R92W Carbon Co., Wyoming

The Sierra Madre outcrop represents the highly progradational (3rd-order highstand) part of the Lewis Shale; the dominant lithofacies are silty shales (microfacies 2) and argillaceous siltstones (microfacies 5). Several high-frequency (4th- or 5th–order) lowstand sandstone units are interstratified with this highstand systems tract (HST). Two major types of sandstone bodies (lenticular and tabular) are recognizable in this outcrop (Witton-Barnes, 2000).

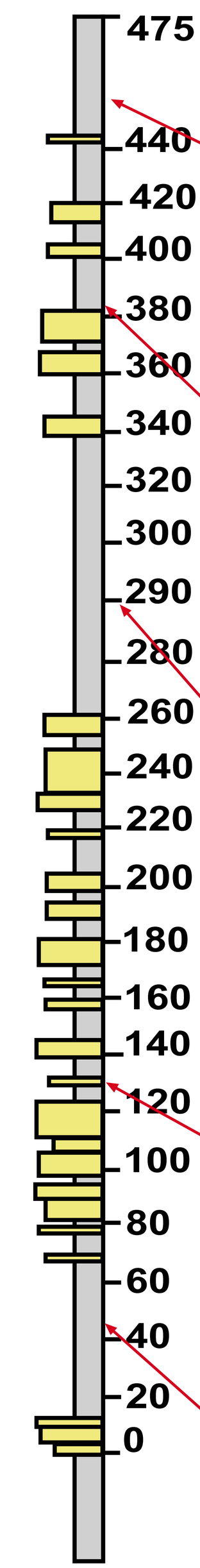
Massive to weakly laminated shales and siltstones that compose the Lewis Shale HST are characterized by relatively high (mean 37 %) content of detrital silt, low TOC values, and the lowest sealing capacities (mean 1.150 psia) measured within the Lewis Shale. These relatively low sealing capacities are typical of shales from proximal parts of marine depositional systems (Dawson and Almon, 2002).

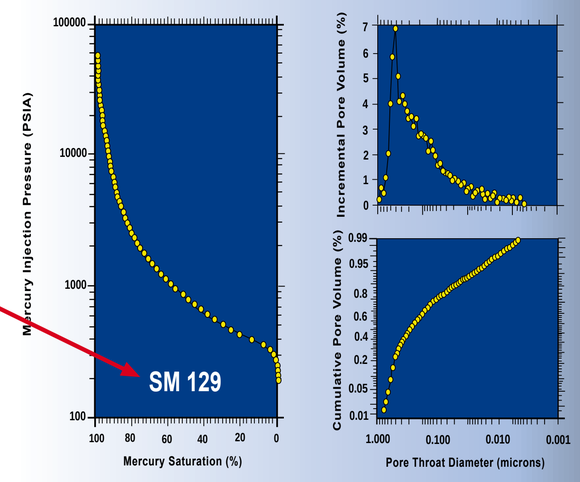
HST Shale (15 cm scale)

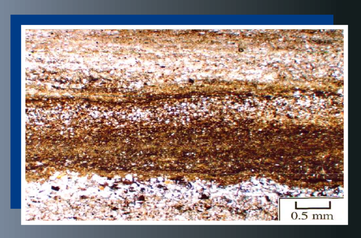


Sandstone - filled channel within HST shale.

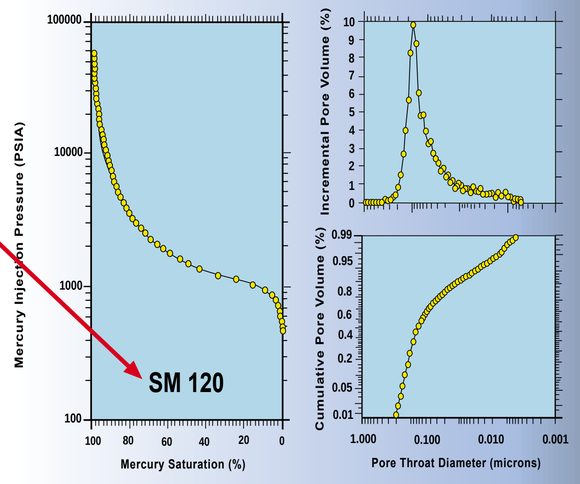
Sheet sandstone within HST shale.

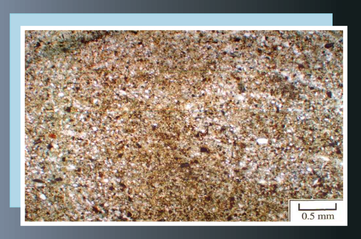




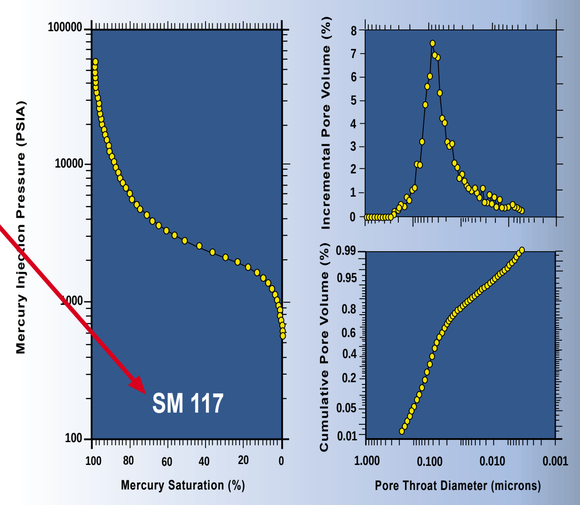


Microfacies 2 / 5

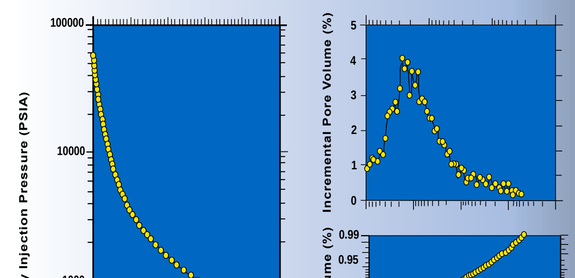


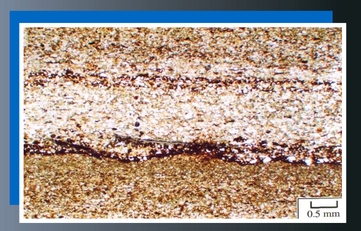


Microfacies 5

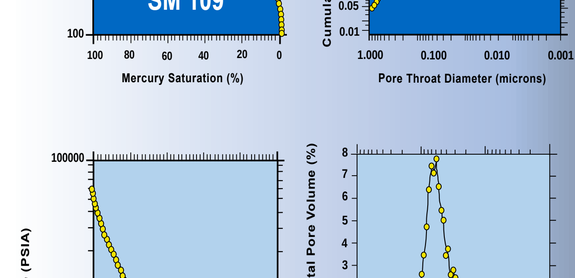


Microfacies 5

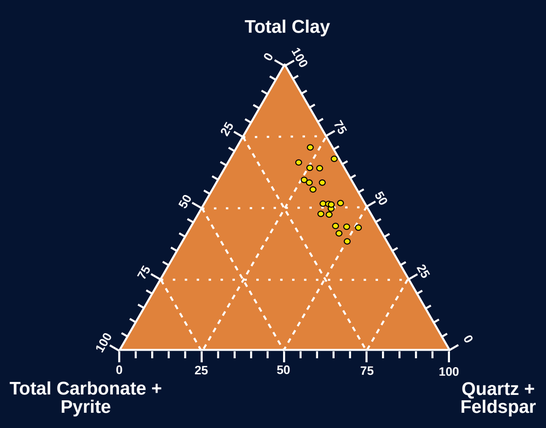


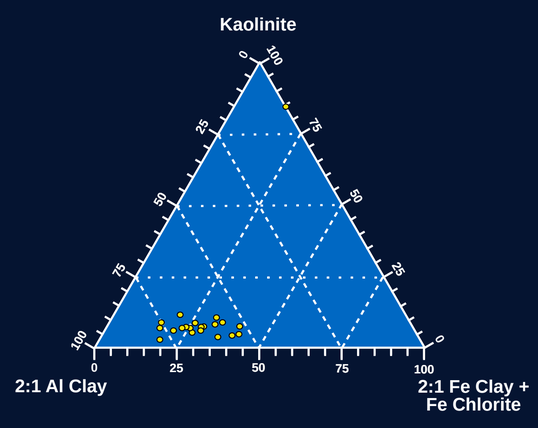


Microfacies 2



Microfacies 5





Total clay content ranges from 35 to 71% (mean 52%). Detrital silt (quartz + feldspars) abundance varies from 24 to 59% (mean 37%). Pyrite, siderite, Mg-calcite and dolomite are accessory (1 to 4%) components. The normalized clay mineral composition is dominated (56 to 78%) by 2:1 aluminum clays (mean 67%).