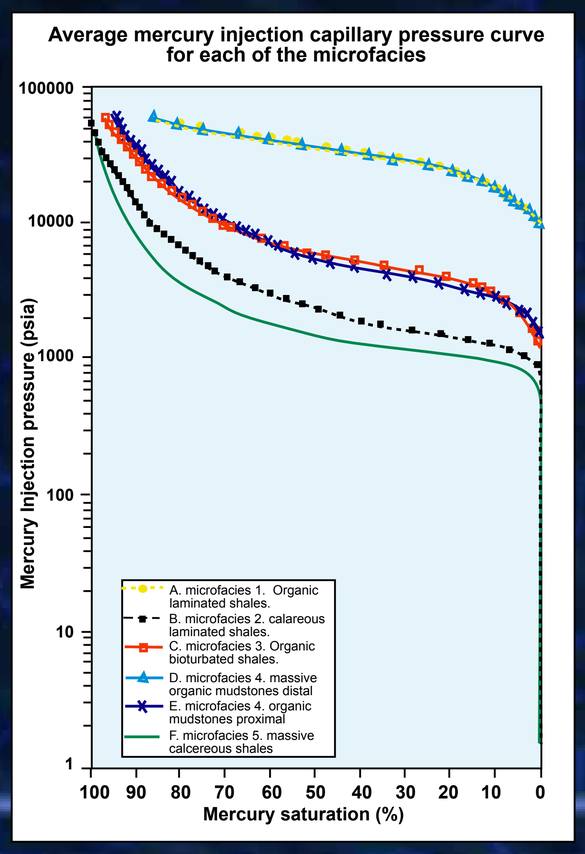
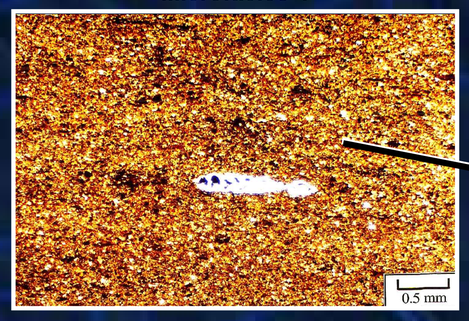
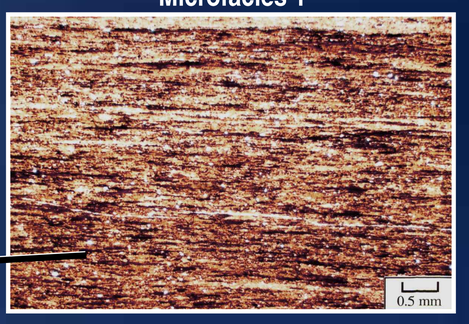
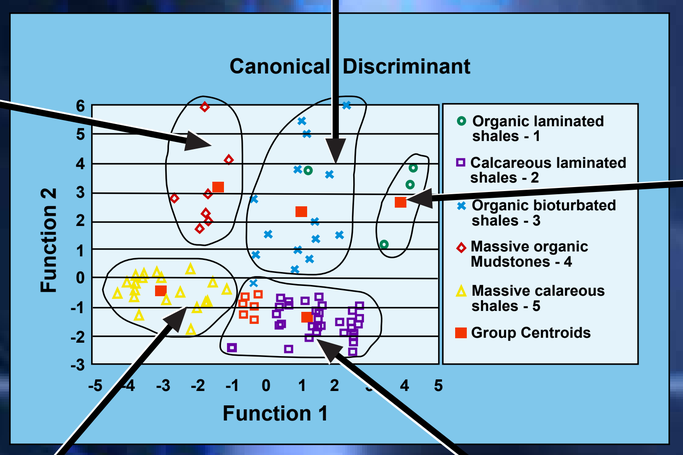
Data Summary

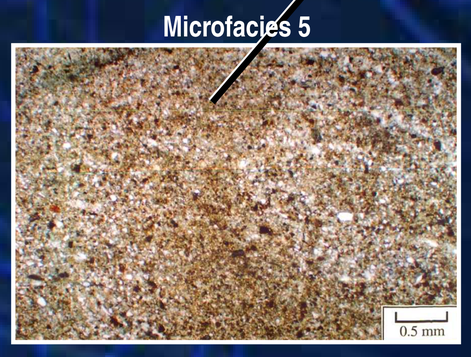


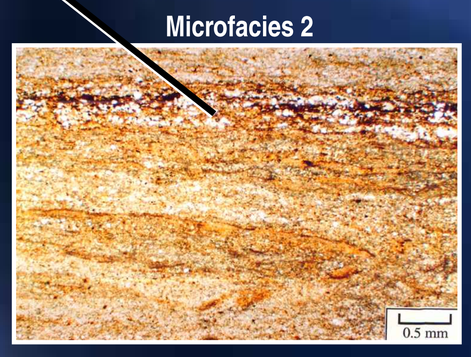
Distal marine (TST) shales (microfacies 1 and 4) exhibit the "best" seal character based on MICP analysis.





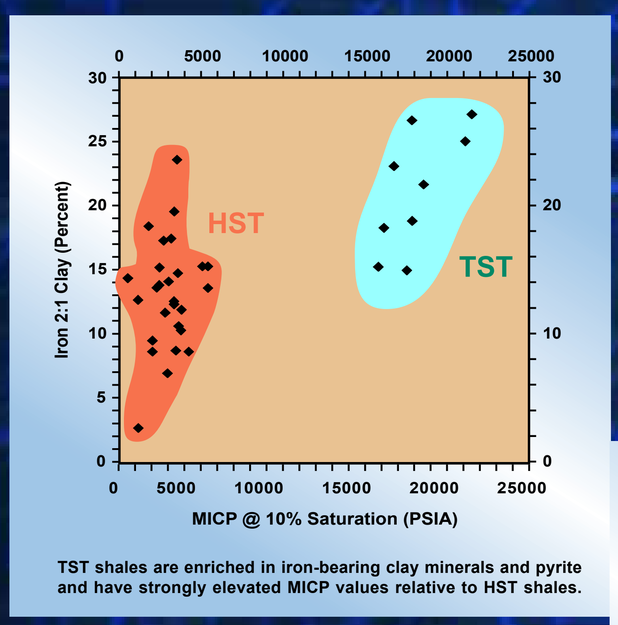




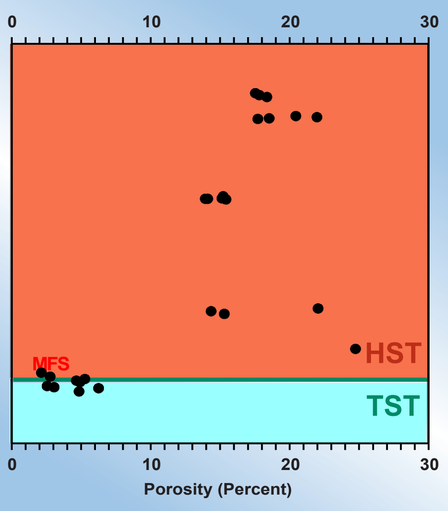


Discriminant function analysis of Lewis Shale microfacies yielded two functions that account for nearly 99% of the total variance.

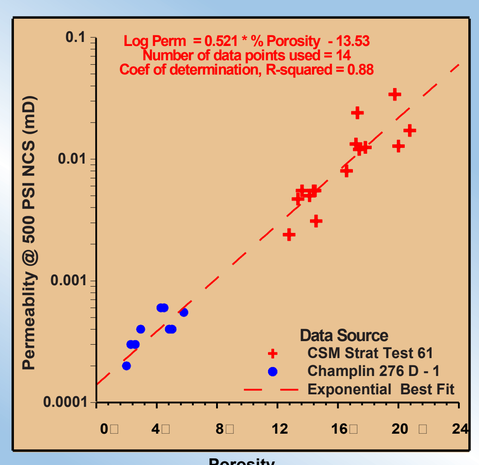
Microfacies	Description	Seal Character	Depositional System
Microfacies 1	Finely laminated, pyritic, black shales	Excellent	TST/CI
Microfacies 2	Moderately to very silty calcareous shales	Poor	HST
Microfacies 3	Moderately to very silty, mottled, calcareous shales	Moderate to poor	LST
Microfacies 4	Fossiliferous silghtly to moderately silty claystones	Variable	TST/HST
Microfacies 5	Very silty shales and mottled argillaceous siltstones	Poor	HST/LST



TST shales are enriched in iron-bearing clay minerals and pyrite and have strongly elevated MICP values relative to HST shales.



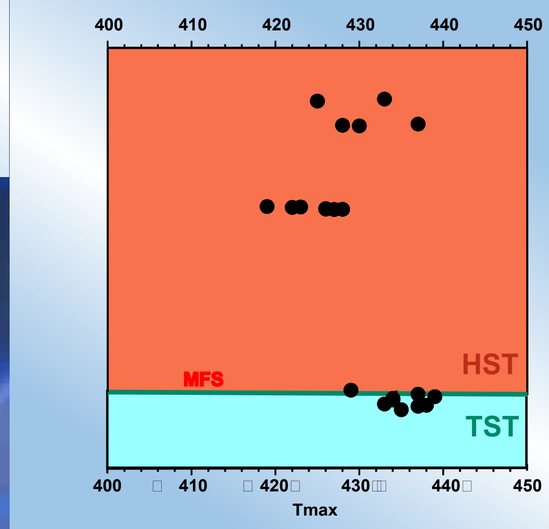
Porosity of TST shales is significantly lower than porosity in HST shales.



A strong correlation between subsurface and outcrop samples, along with evidence of comparable burial history (Tmax data), suggests that other factors (e.g., diagenetic processes) are responsible for differences in seal character.

MICP values and porosity are reduced significantly in the late TST relative to all parts of the HST interval. The reduced porosity in clay-rich TST shales is attributed to improved organization of particles (well-developed laminar fabrics) as well as the precipitation of Fe-carbonate cements during early submarine diagenesis.

Additionally, there is a major difference in the permeability of TST and HST shales. Within the Lewis HST there is a weak trend of upward increasing permeability; this trend appears to correlate with a vertical increase in the content of detrital silt.



Tmax values are essentially the same for all Lewis Shale samples; which implies that they have undergone comparable burial histories.