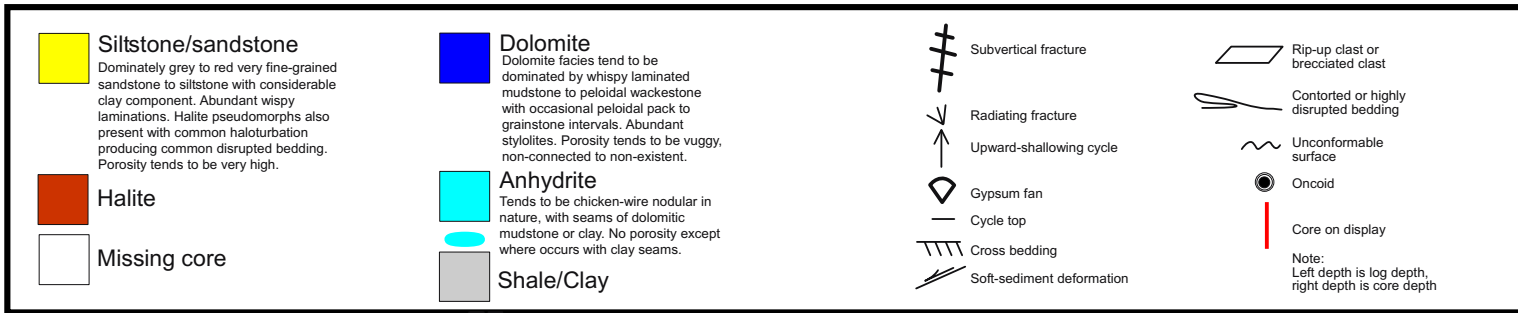
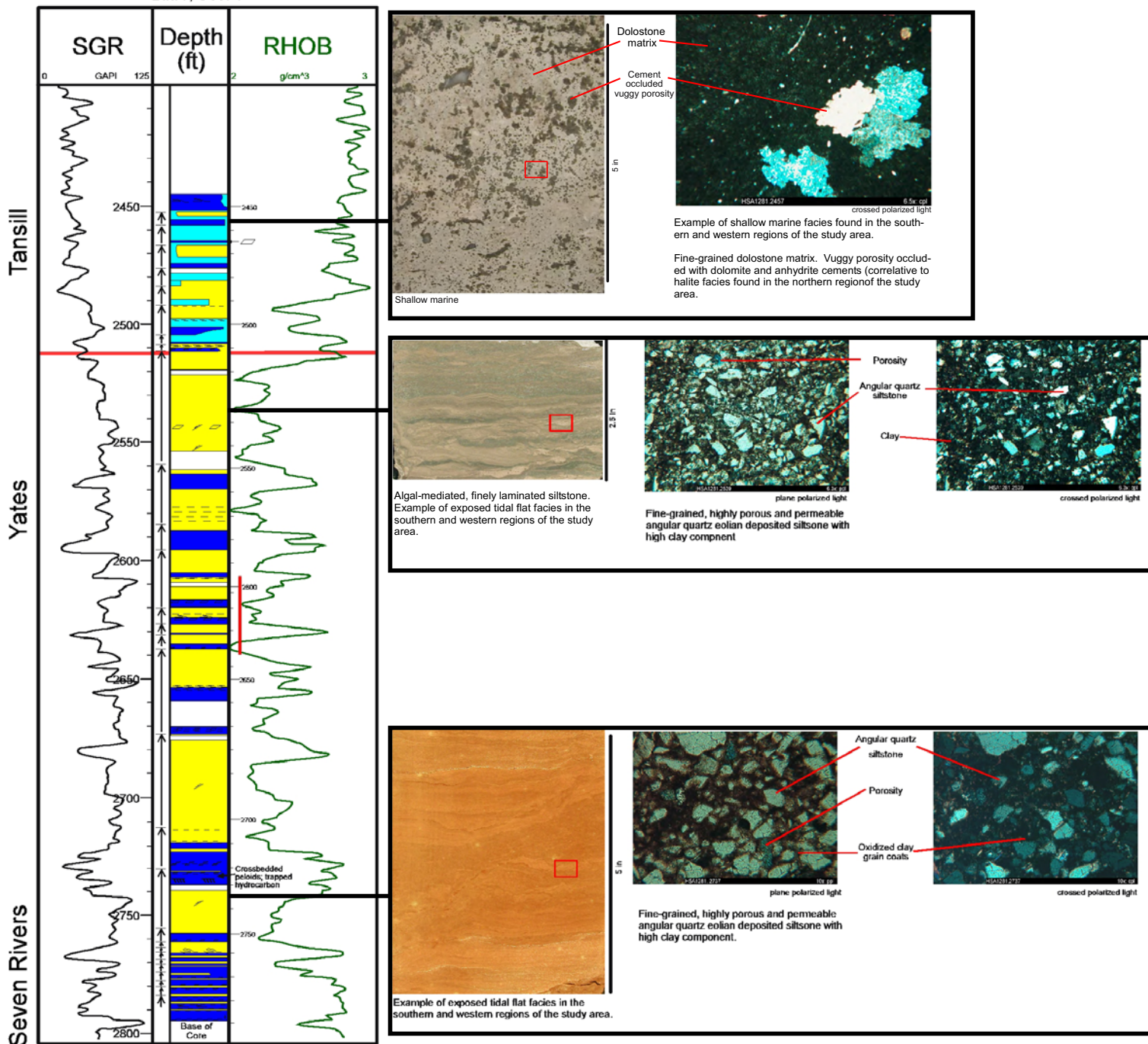


# Dominant Facies in the Yates Formation

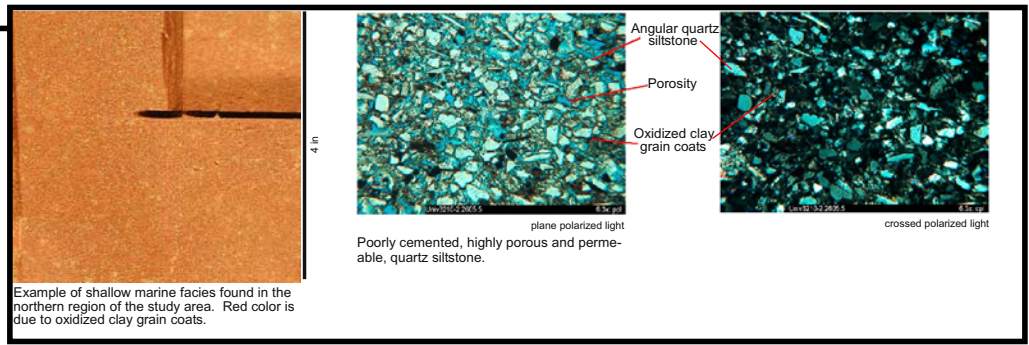
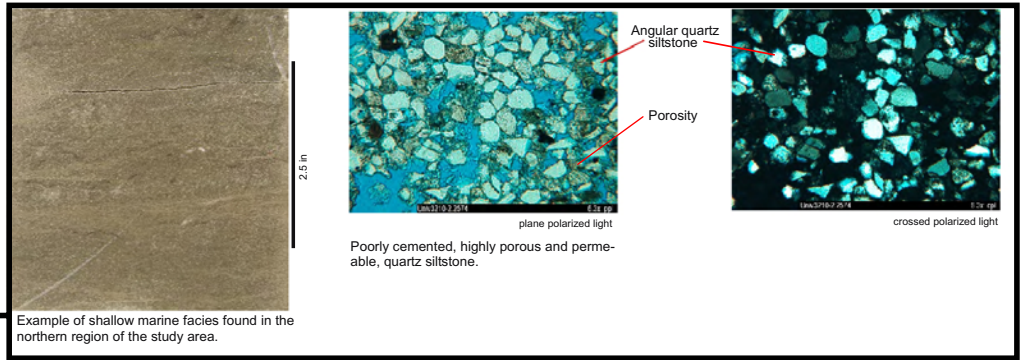
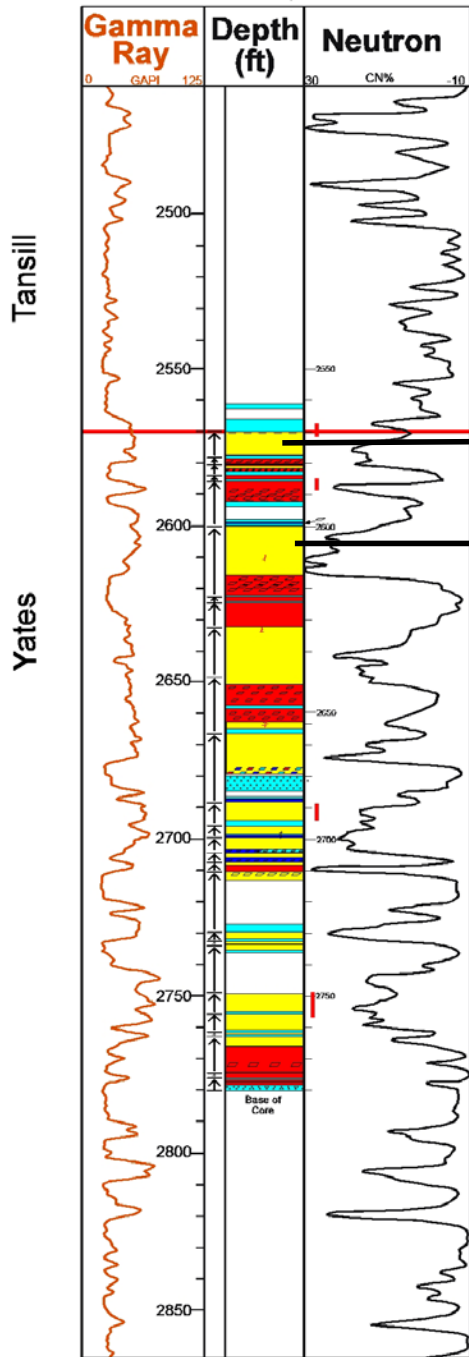
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H.S.A. 1281  
 API # 424753289300  
 North Ward-Estes Field  
 Ward County, Texas  
 Blk. F, Sec. 1



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University 32-10 No. 2  
Embar Field  
Andrews County, Texas  
Blk. 10, Sec. 32



<p><b>Siltstone/sandstone</b> Dominated by grey to red very fine-grained sandstone to siltstone with considerable clay component. Abundant wispy laminations. Halite pseudomorphs also present with common haloturbation producing common disrupted bedding. Porosity tends to be very high.</p> <p><b>Halite</b></p> <p>Missing core</p>	<p><b>Dolomite</b> Dolomite facies tend to be dominated by wispy laminated mudstone to peloidal wackestone with occasional peloidal pack to grainstone intervals. Abundant stylolites. Porosity tends to be vuggy, non-connected to non-existent.</p> <p><b>Anhydrite</b> Tends to be chicken-wire nodular in nature, with seams of dolomitic mudstone or clay. No porosity except where occurs with clay seams.</p> <p>Shale/Clay</p>	<p>Subvertical fracture</p> <p>Radiating fracture</p> <p>Upward-shallowing cycle</p> <p>Gypsum fan</p> <p>Cycle top</p> <p>Cross bedding</p> <p>Soft-sediment deformation</p>	<p>Rip-up clast or brecciated clast</p> <p>Contorted or highly disrupted bedding</p> <p>Unconformable surface</p> <p>Oncoid</p> <p>Core on display</p> <p>Note: Left depth is log depth, right depth is core depth</p>
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## Observations

- There is a relatively sharp contact between the Yates and overlying Tansil formation. this interpreted to be due to a relatively sudden influx of marine water and corresponding increase in accommodation space.
- The contact between the Seven Rivers formation and the overlying Yates Formation is a gradual facies change from thick dolomite and thin clastic intervals, to progressively thinning dolomite and thickening clastic intervals. this is interpreted to be due to the increasingly restrictive environmental conditions and an increase in eolian influence.
- Soft-sediment deformation is common in clastic intervals. Although trapped hydrocarbons are locally present in peloid-cross-bedded and vuggy dolomite, the porosity logs show that the reservoir is developed in highly porous and permeable siltstone intervals.
- Relatively impermeable, non-porous cycle-base dolomite, anhydrite, and halite intervals likely act as part seal for the highly porous and permeable cycle-top siltstone reservoirs.
- The presence of halite indicates the development of isolated brinepools of gypsum saturation. Surface exposure and fluctuating water tables promoted halite precipitation, and halite replacement of gypsum.
- Clastic-rich seams, common in the Univ. 3210-2 core, represent condensed intervals formed during exposure.
- Chicken-wire, nodular anhydrite gypsum, which is common throughout the Yates Formation is not present in Univ. 3210-2. Anhydrite is either produced as primary deposits in the form of cryptalgal laminations, or secondary replacement of bottom-growing gypsum.
- Cycle-base halite breccias (salt karst), which are commonly developed in isolated brine pools and later exposed, are composed of brecciated clasts of halite intermixed with red siltstone.

## Conclusions

- Cycle top siltstones and sandstones are relatively planer and laterally continuous.
- Cycle-base tidal flat dolostone, anhydrite and halite facies, act as baffles for the underlying cycle-top siltstone/sandstone reservoir facies. Facies are relatively continuous but display local thickness variations due to erosion or non-deposition.
- Cycle base facies vary in lithology from tidal flat dolostone and anhydrite in the western and southern regions of the study area, to halite in the northern region of the study area, while maintaining similar wireline log responses.
- Cores must be used to calibrate wireline log interpretation of cycle base facies from a given region within the Yates Formation.