

A

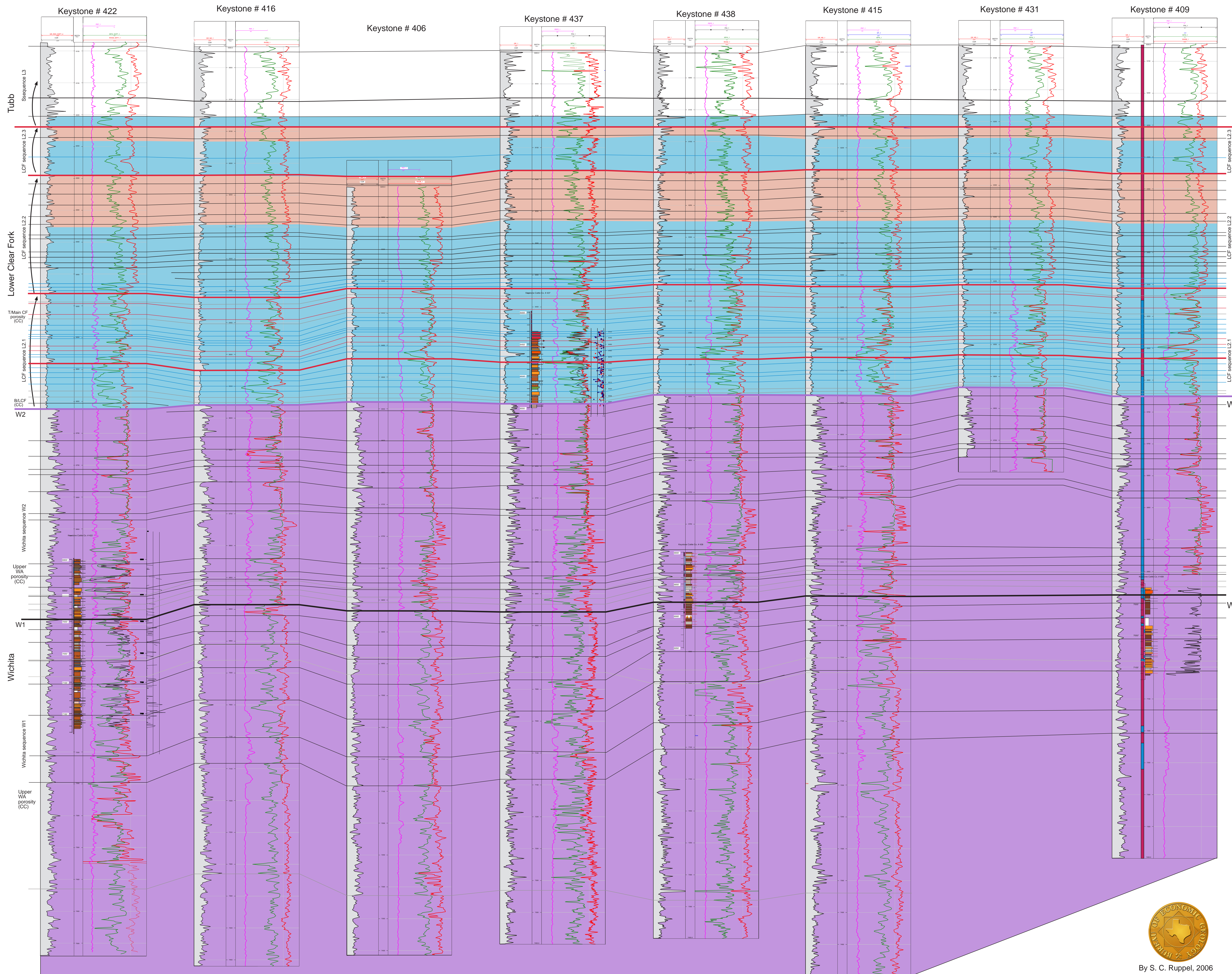
LOWER CLEAR FORK - WICHITA FACIES AND STRATIGRAPHY

KEYSTONE SOUTH CLEAR FORK FIELD, WINKLER COUNTY, TEXAS

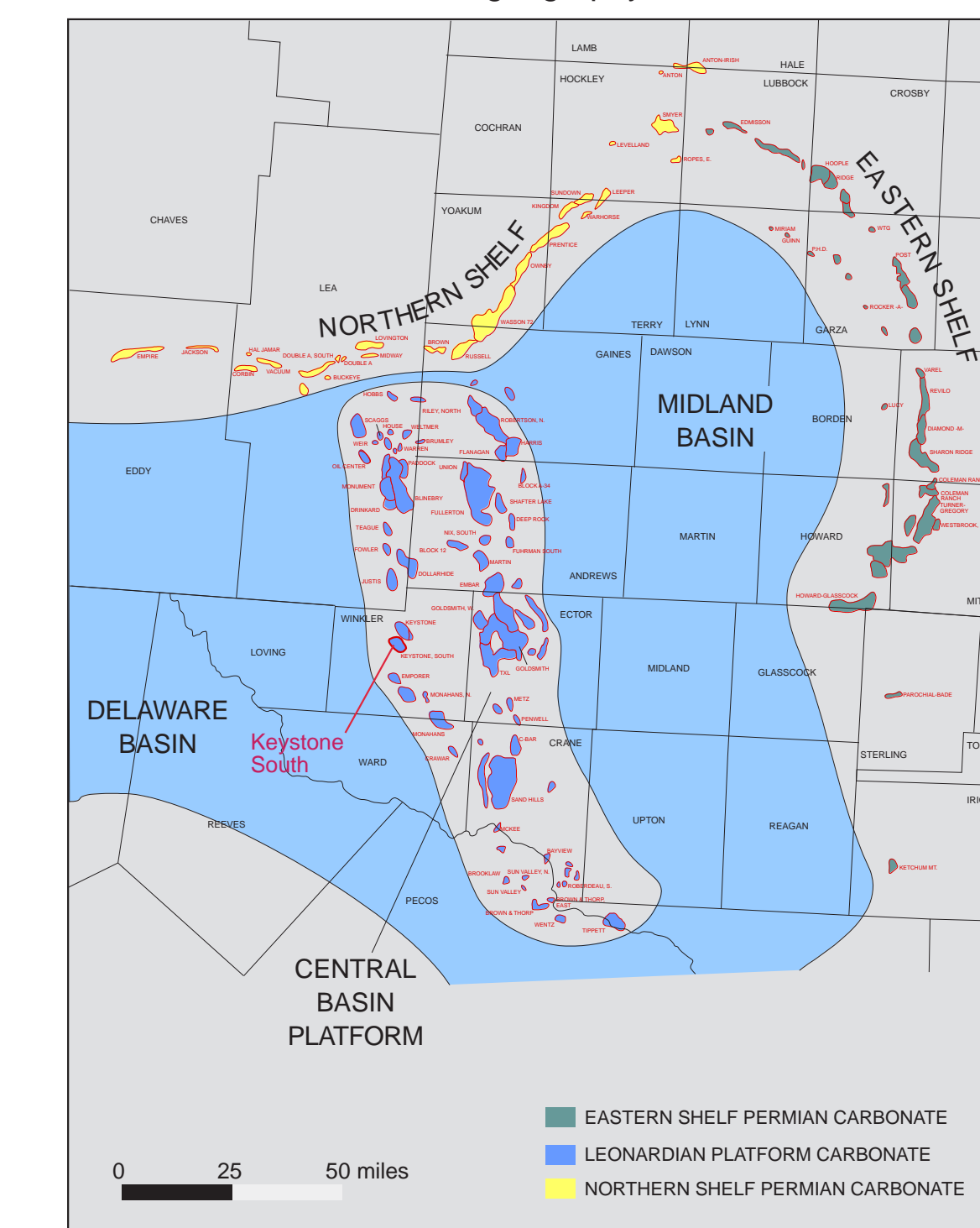
A'

WEST

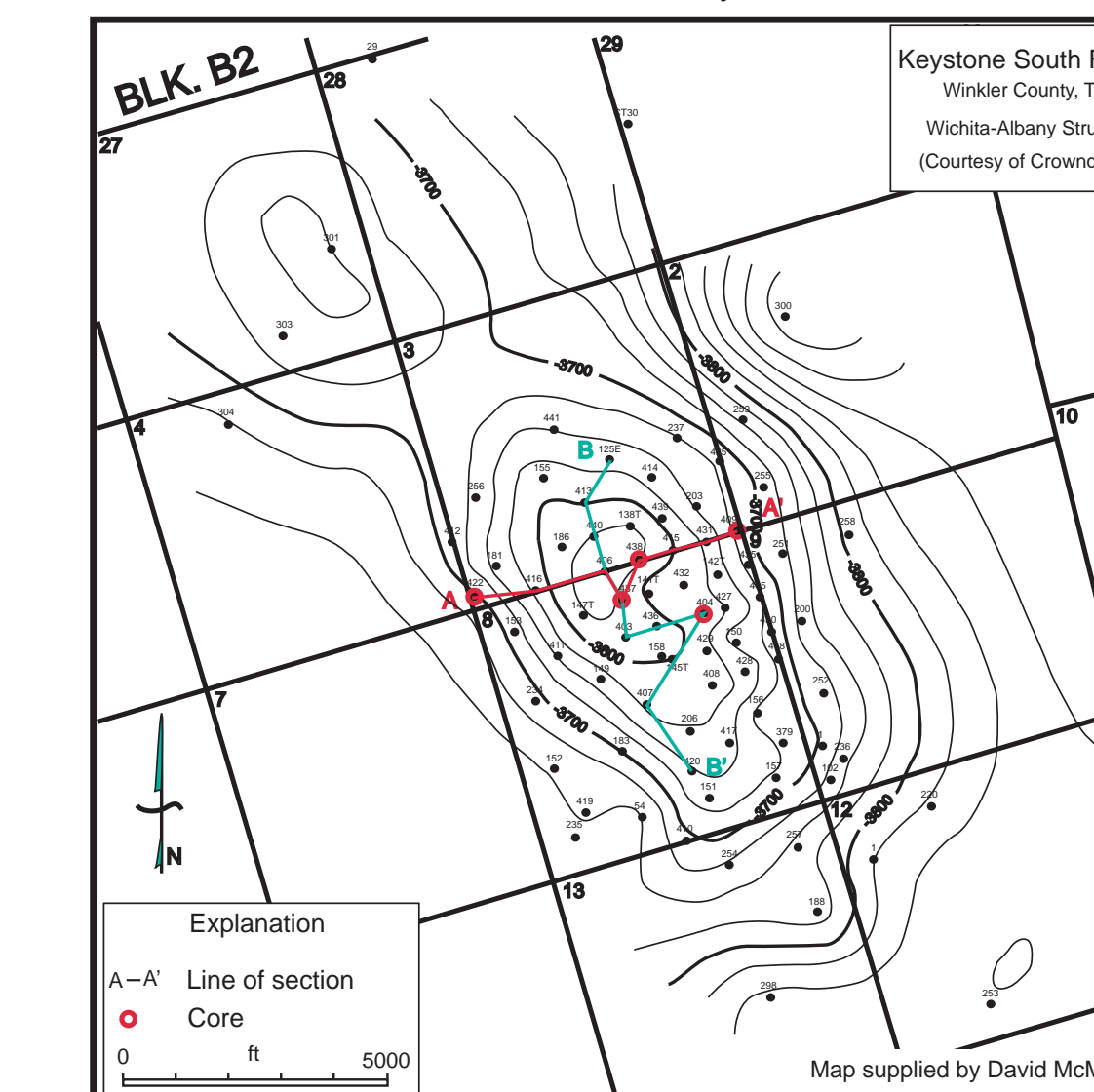
EAST



Middle Permian Paleogeography and Leonardian Fields



Lower Clear Fork Structure: Keystone South Field



STRATIGRAPHY AND FACIES OVERVIEW

LOWER CLEAR FORK
 The Lower Clear Fork comprises three high frequency sequences (HFS) that are part of a major composite (3rd-order) sequence. Each HFS is composed of a lower transgressive leg (TST) and an upper highstand leg (HST). TSTs are characterized by dominantly subtidal cycles that contain facies that display good porosity and permeability but limited lateral continuity. HSTs are characterized by tidal flat-capped subtidal cycles. The porosity in these cycles is concentrated in the tidal flat caps which, although continuous, generally have low permeability.

WICHITA
 Regionally, the Wichita facies comprises mud-dominated, restricted peritidal to tidal flat deposits that are locally karsted. Cores from Keystone South are generally consistent with this interpretation although they indicate less restricted conditions (more subtidal) than at Fullerton field for example. Based on cores, neither facies or cycles exhibit much lateral continuity. Wichita porosity and permeability appear to be controlled by mineralogy as much as by facies. Although not marked by a facies change, the change in mineralogy from dolostone to limestone at the W1 marker may correspond to a major sequence boundary that has been defined from regional outcrop and subsurface studies.

EXPLANATION

Lower Clear Fork/Tubb Systems Tracts

- TST: shallow water silty peritidal; low permeability
- Late HST: tidal flat-capped subtidal; most porosity in low permeability, continuous cycle tops
- TST-early HST: subtidal; more discontinuous porous and permeable facies

Wichita Systems Tracts

- TST-HST: restricted shallow subtidal to peritidal; porous and locally permeable; facies continuity poor.

Core Facies

- 1 Tidal flat
- 2 Mudstone
- 3 Peloid wackestone-packstone
- 4 Skeletal wackestone
- 5 Peloid packstone
- 6 Peloid grain-dominated packstone
- 7 Ooid/peloid grain-dominated packstone
- 8 Siltstone/sandstone
- 9 Fusulinid/peloid packstone
- 10 Fusulinid wackestone
- 11 Oncolite packstone
- 12 Roof crackle breccia
- 13 Polymict cave fill conglomerate
- 14 Lithoclast breccia
- 15 No core

Correlations

- Exposed cycle top
- Subtidal cycle top
- Correlation marker



By S. C. Ruppel, 2006