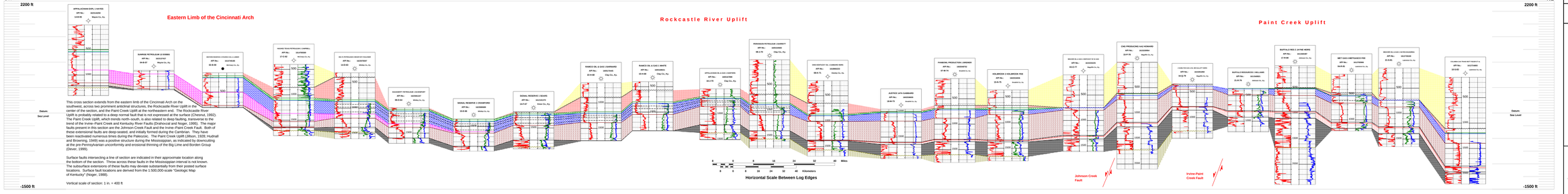
Strike Section 1: Structural Datum (Sea Level)

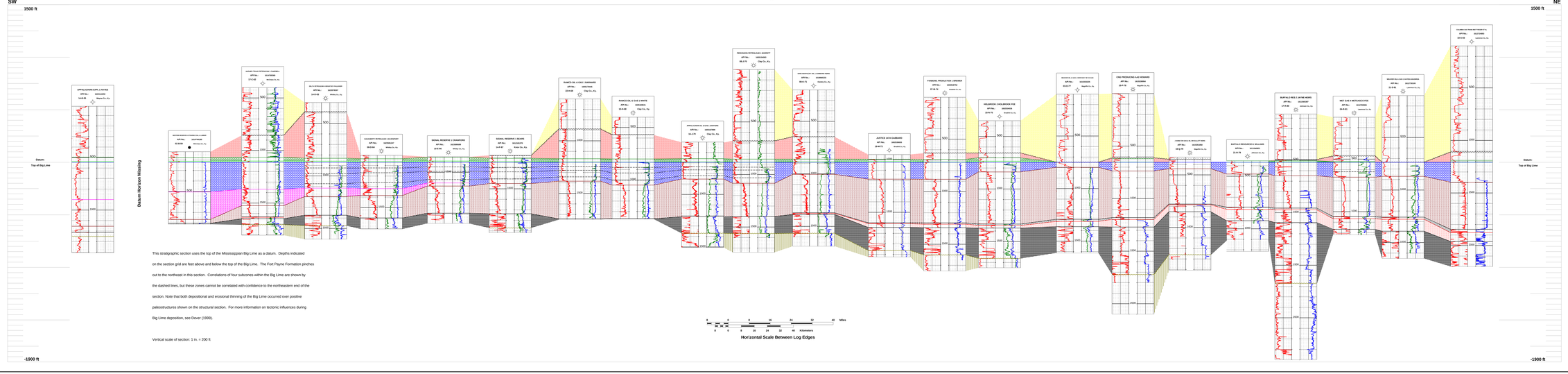


This cross section extends from the eastern limb of the Cincinnati Arch on the southwest, across two prominent anticlinal structures, the Rockcastle River Uplift in the center of the section, and the Paint Creek Uplift at the northeastern end. The Rockcastle River Uplift is probably related to a deep normal fault that is not expressed at the surface (Chesnut, 1992). The Paint Creek Uplift, which trends north–south, is also related to deep faulting, transverse to the trend of the Irvine–Paint Creek and Kentucky River Faults (Drahovzal and Noger, 1995). The major faults present in this section are the Johnson Creek Fault and the Irvine–Paint Creek Fault. Both of these extensional faults are deep-seated, and initially formed during the Cambrian. They have been reactivated numerous times during the Paleozoic. The Paint Creek Uplift (Jillson, 1928; Hudnall and Browning, 1949) was a positive structure during the Mississippian, as indicated by downcutting at the pre-Pennsylvanian unconformity and erosional thinning of the Big Lime and Borden Group (Dever, 1999).

Surface faults intersecting a line of section are indicated in their approximate location along the bottom of the section. Throw across these faults in the Mississippian interval is not known. The subsurface extensions of these faults may deviate substantially from their posted surface locations. Surface fault locations are derived from the 1:500,000-scale "Geologic Map of Kentucky" (Noger, 1988).

Vertical scale of section: 1 in. = 400 ft

Strike Section 1: Stratigraphic Datum (Top of Big Lime)



This stratigraphic section uses the top of the Mississippian Big Lime as a datum. Depths indicated on the section grid are feet above and below the top of the Big Lime. The Fort Payne Formation pinches out to the northeast in this section. Correlations of four subzones within the Big Lime are shown by the dashed lines, but these zones cannot be correlated with confidence to the northeastern end of the section. Note that both depositional and erosional thinning of the Big Lime occurred over positive paleostructures shown on the structural section. For more information on tectonic influences during Big Lime deposition, see Dever (1999).

Vertical scale of section: 1 in. = 200 ft

Kentucky Geological Survey
James C. Cobb, State Geologist and Director
University of Kentucky, Lexington

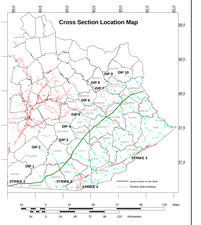
Map and Chart Series 14
Series XII, 2000

Regional Subsurface Geologic Cross Sections of the Mississippian System, Appalachian Basin, Eastern Kentucky

Sheet 11 of 14

David C. Harris and Thomas N. Sparks

Cross Section Location Map

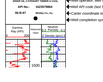


Explanation

Horizons

- Pennsylvanian System
- Pennington Formation
- Mississippian
  - Little Lime
  - Pencil Cave Shale
  - Big Lime
    - Zone 1
    - Zone 2
    - Zone 3
    - Zone 4
    - Zone 5
  - Fort Payne Formation
  - Borden Group
  - Sunbury Shale
  - Bedford/Berea undifferentiated
  - Ohio/Chattanooga Shale
- Devonian
  - Coniferous
- No vertical scale

Geophysical Logs



- Well operator, well number, lease
- Kind of log used (up to 3 digits spaced no.)
- Carter coordinate location and county
- Well completion symbol:
  - oil well
  - Oil well gas well
  - Dry and abandoned well
  - injection well

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