

MIDDLE TOKIO UNCONFORMITY

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ABSTRACT

An unconformity within the Tokio formation has been identified in the subsurface of southwest Arkansas. The portion of the formation underlying this unconformity is completely overlapped south of the outcrop and only the upper portion of the Tokio formation of the subsurface is represented at the outcrop in southwest Arkansas.

The Tokio and the overlying Brownstown formations comprise the Austin Group of the Gulf Cretaceous Series in southwest Arkansas and northwest Louisiana. The deposits which constitute the Tokio formation were originally grouped with the underlying Eagle Ford sands and clays and termed the Bingen sand by Hill (1888). Miser and Purdue (1919) referred to the Bingen sand as the Bingen formation and designated the upper 100 to 150 feet of quartz sand as the Tokio member. Dane (1929) elevated the Tokio to formational rank and redefined it by including at its base a gravel bed 30 to 40 feet thick; the remainder of the original Bingen formation has subsequently been named the Centerpoint Volcanics (Hazzard, 1939). The type locality of the Tokio formation is in the vicinity of the settlement of Tokio in northern Hempstead County, Arkansas.

It has long been recognized that a pronounced unconformity exists at the base of the Tokio formation. This unconformity is indicated at the outcrop in southwest Arkansas by a well developed gravel bed at the base of the formation and by the widely varying age of the deposits upon which the Tokio formation rests. In Howard and Sevier Counties, the Tokio lies unconformably upon the highly irregular surface of the Eagle Ford (Centerpoint) Volcanics. Farther to the east the Tokio overlaps the Centerpoint Volcanics and rests upon Lower Cretaceous deposits and finally upon the Atoka formation of Carboniferous age (Dane, 1929).

In the subsurface of southwest Arkansas, the Tokio formation is characterized by the development of three pronounced sands, termed the upper, middle, and basal Tokio sands, which are separated by varying thicknesses of glauconitic, calcareous, carbonaceous clay. The basal Tokio sand is graveliferous in the subsurface and rests upon progressively older formations in a northeastward direction. This northeastward overlap of the underlying formations is clearly seen on Figures 2 and 3 and indicates that the unconformity at the base of the Tokio formation extends southward in the subsurface into north Louisiana.

The middle Tokio sand is also graveliferous in the subsurface of southwest Arkansas. The section underlying the middle Tokio gravel is truncated in a northeastward direction, indicating this graveliferous zone marks an unconformity within the Tokio formation which previously has not been recognized. Figures 2 and 3 show that the portion of the Formation below the middle Tokio unconformity is completely overlapped south of the outcrop (Figure 1) and only the upper portion of the Tokio formation of the subsurface is represented at the surface in southwest Arkansas.

¹ The California Company.

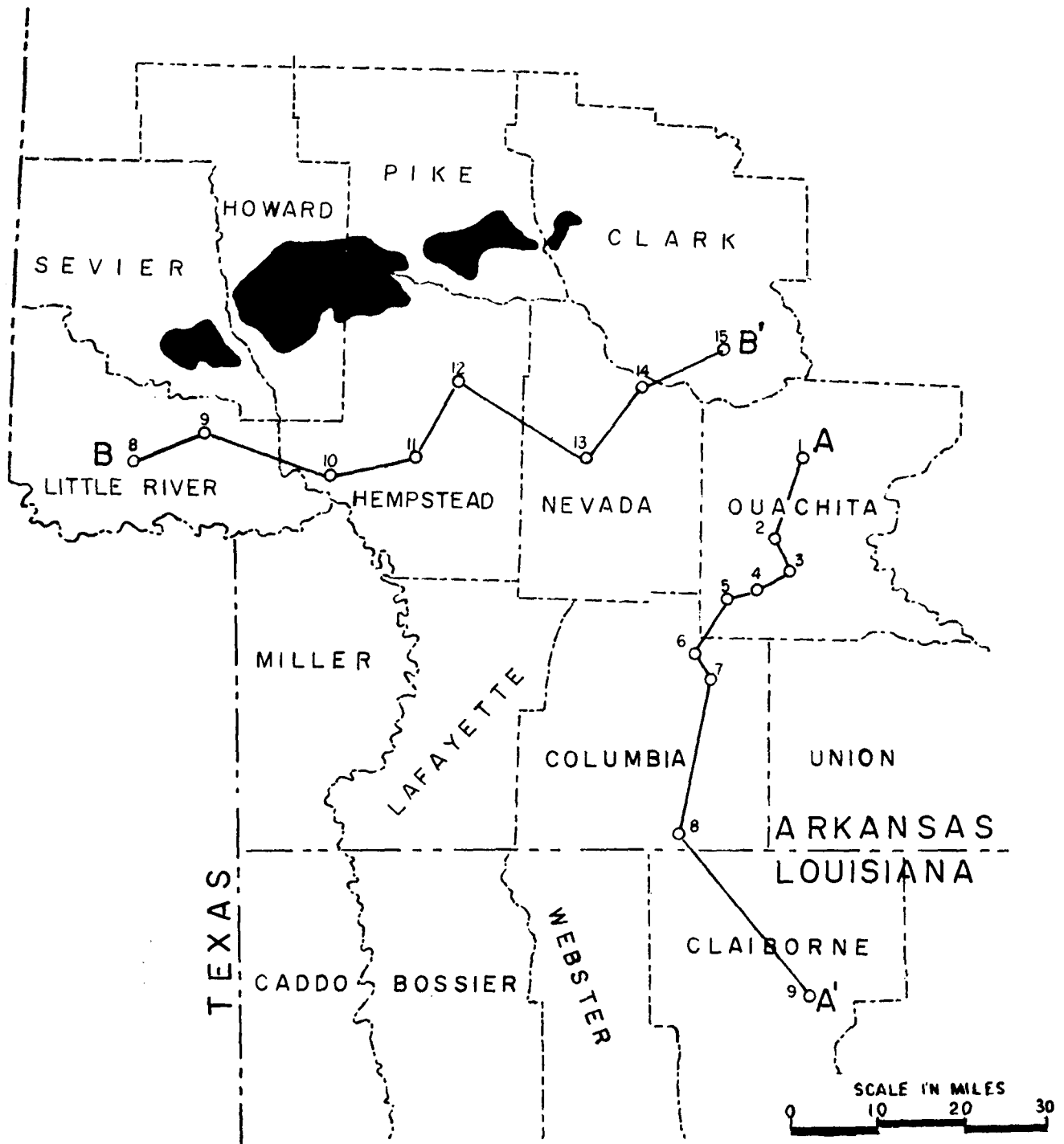
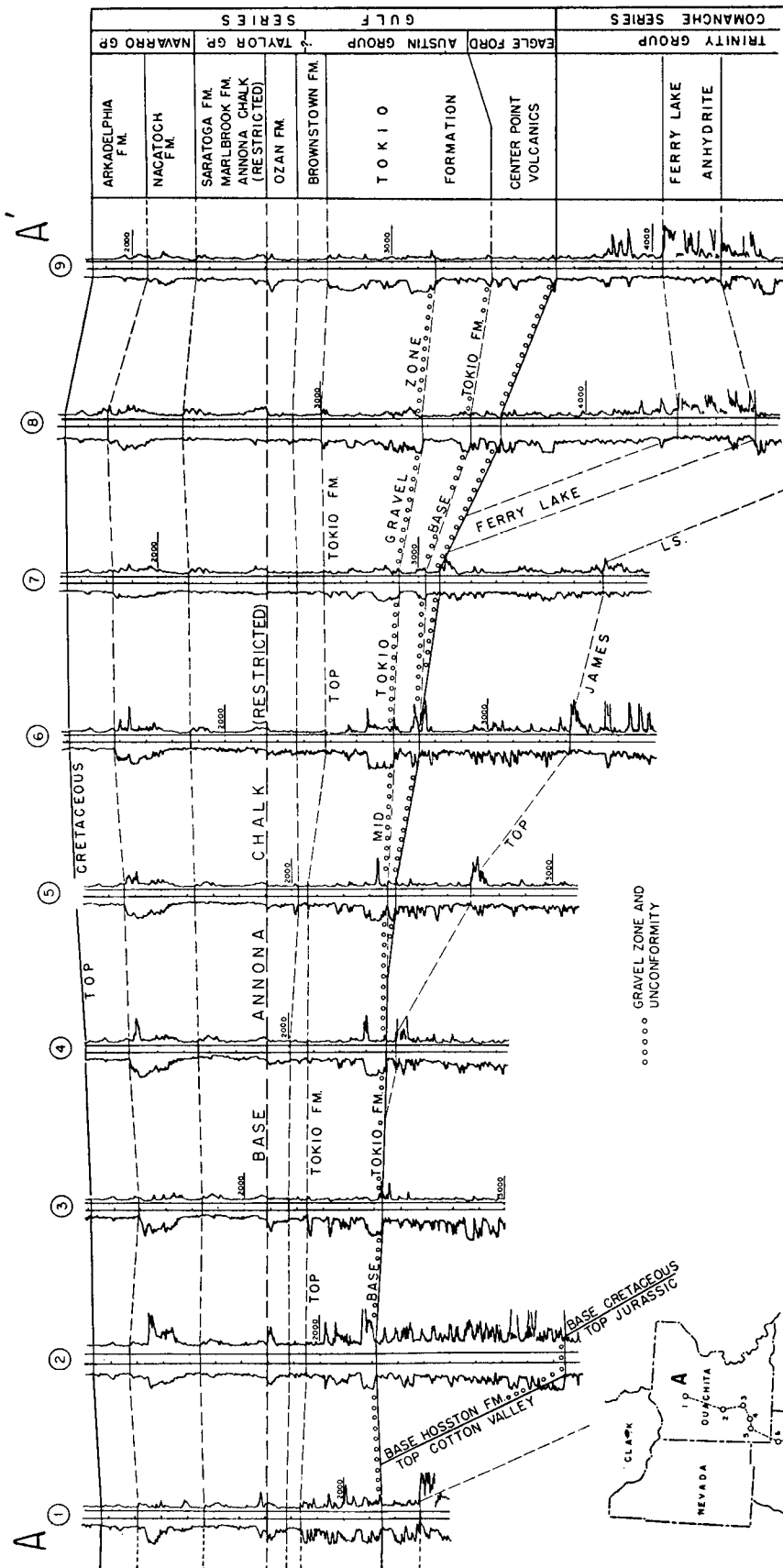


Figure 1. Index map showing generalized outcrop of Tokio Formation and location of Cross sections.



LIST OF WELLS

1	SHELLY OIL CO	CAMDEN CBC CO I	12-125-18W	OUACHITA, ARK.
2	TIDEWATER	GRAVES I	33-135-18W	"
3	MC ALESTER	GRAVES I-A	27-145-18W	"
4	MC ALESTER	MC GAUCHT I-A	6-155-18W	"
5	LION OIL CO.	WESSON I	3-155-19W	"
6	MC ALESTER	CHRISTOPHER I-A	7-165-19W	COLUMBIA, ARK.
7	MC ALESTER	WILSON-NESBIT I-A	32-165-19W	"
8	SHELLY OIL CO.	PIPES I	26-185-20W	"
9	TEXAS CO.	KING I	32-211-5W	CLAIBORNE, LA.

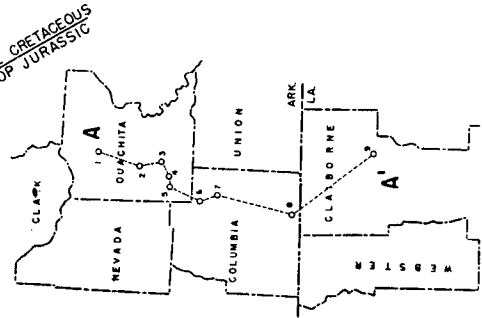


Figure 2. North-South Stratigraphic Section, Ouachita County, Arkansas, to Claiborne Parish, Louisiana.

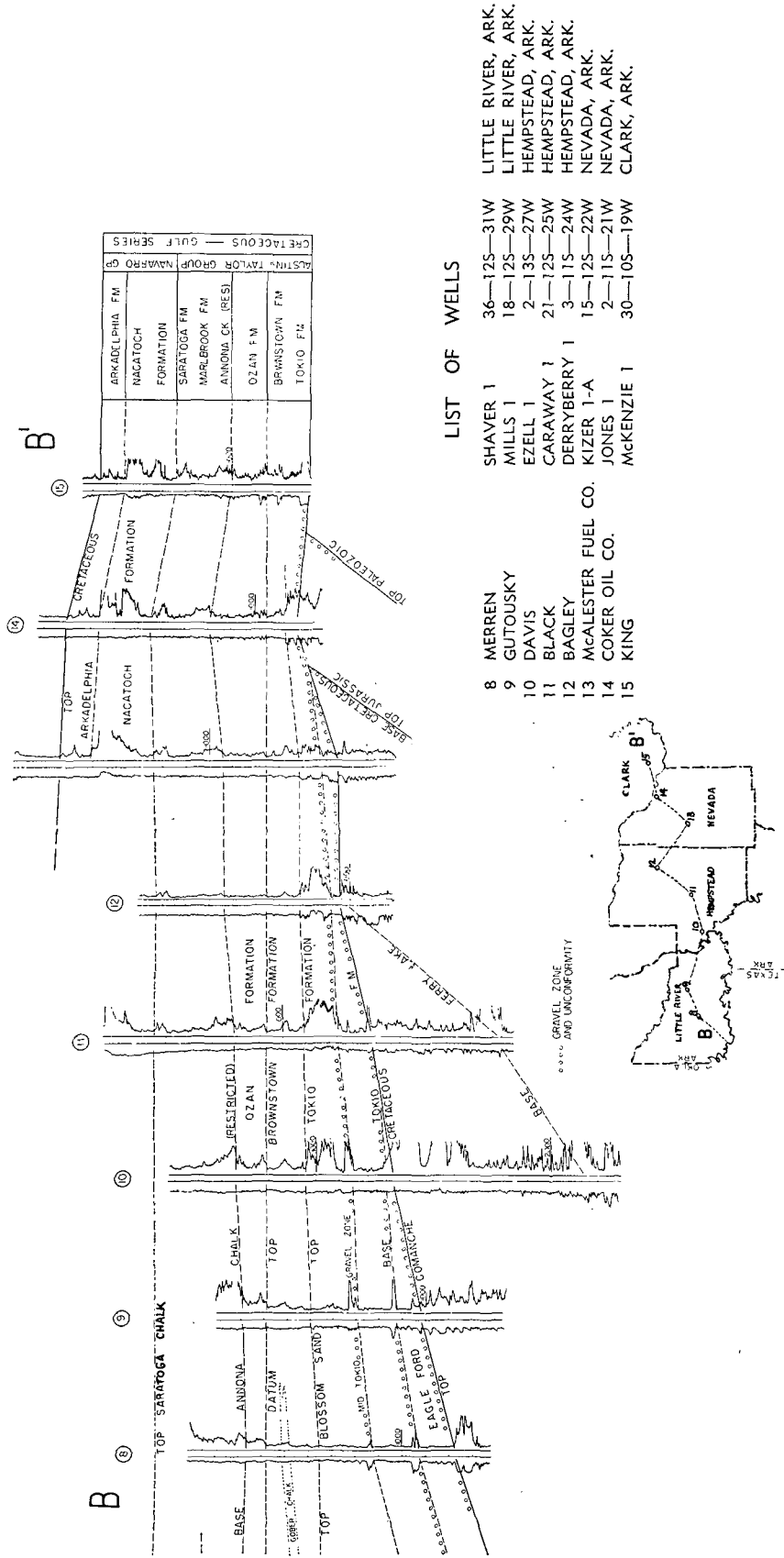


Figure 3. East-West Stratigraphic Section, Little River County to Clark County, Arkansas.

REFERENCES CITED

- Dane, C. H., 1929, Upper Cretaceous Formations of Southwestern Arkansas: Arkansas Geological Survey, Bulletin No. 1, 215 pp., 29 pls., 4 figs.
- Hazzard, R. T., 1939, The Centerpoint Volcanics of Southwest Arkansas: Shreveport Geological Society, Guidebook, 14th Annual Field Trip, pp. 133-151.
- Hill, R. T., 1888, The Neozoic Geology of Southwestern Arkansas: Arkansas Geological Survey, Annual Report for 1888, vol. 2, 319 pp.
- Miser, H. D., and Purdue, A. H., 1919, Grand Deposits of the Caddo Gap and DeQueen Quadrangles, Arkansas: United States Geological Survey, Bulletin 690, pp. 15-29.