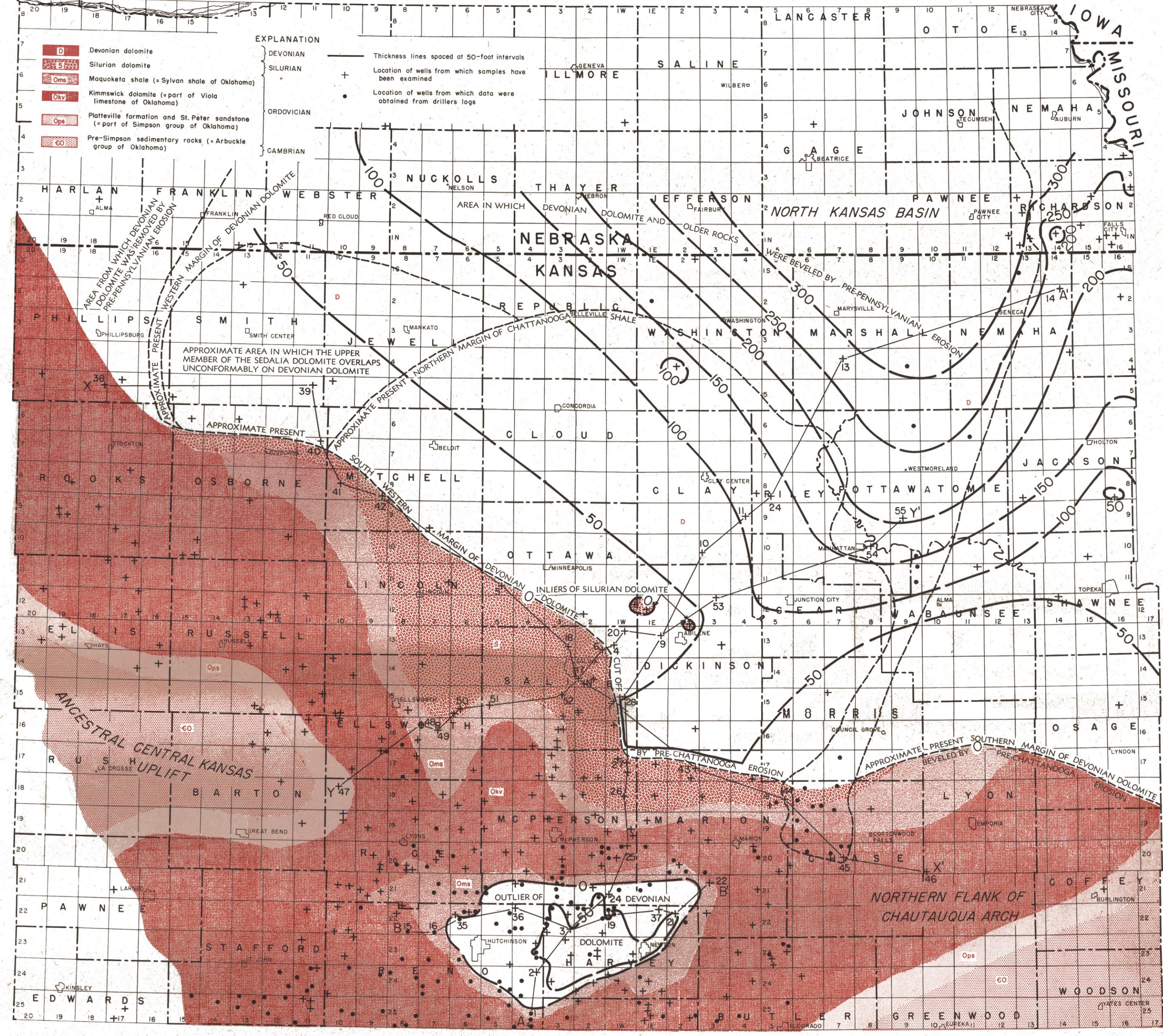


Plate 5



Map of the Salina basin area showing (a) the thickness of the Devonian dolomite where it lies beneath Chattanooga shale and the pre-Chattanooga areal geology and (b) a stratigraphic cross section on the line A-A'. Cross section B-B' is shown in Figure 9. Cross sections X-X' and Y-Y' of Plates 13 and 14 show the present attitude of the Devonian rocks. The map shows the thickness of the Devonian dolomite in areas where the normally overlying Chattanooga shale has survived subsequent erosion. The contact of the Devonian with the Chattanooga shale formerly extended north into Nebraska, but pre-Pennsylvanian erosion stripped the Chattanooga shale from broad areas and thinned or removed the Devonian dolomite thus exposed. Pre-Sedalia erosion removed the Chattanooga shale from parts of Jewell and Smith Counties but the underlying Devonian rocks were not deeply eroded at this time. The rocks exposed in the southeastern corner of the map lay on the

of the Chautauqua arch and were beveled during the pre-Chattanooga exposure. In southwestern part of the area a broad pre-Chattanooga valley cut through the Devonian dolomite and exposed the underlying Silurian, Maquoketa, and Kimmswick rocks. It is probable that before the valley was eroded rocks from the St. Peter to Devonian inclusive were beveled on the flank of the Central Kansas uplift in the same way as on the flank of Chautauqua arch. The rocks outlining the pre-Chattanooga valley toward the west were removed by pre-Pennsylvanian erosion but the broadening of the Kimmswick area toward the northwest suggests that the valley continued in that direction. The valley is bounded also by the thickness of the Chattanooga shale in Plate 6. Pre-Devonian hills of an dolomite were re-exposed in Dickinson County by pre-Chattanooga beveling. Similar hills are probably represented in Washington County by local thinning of the Devonian

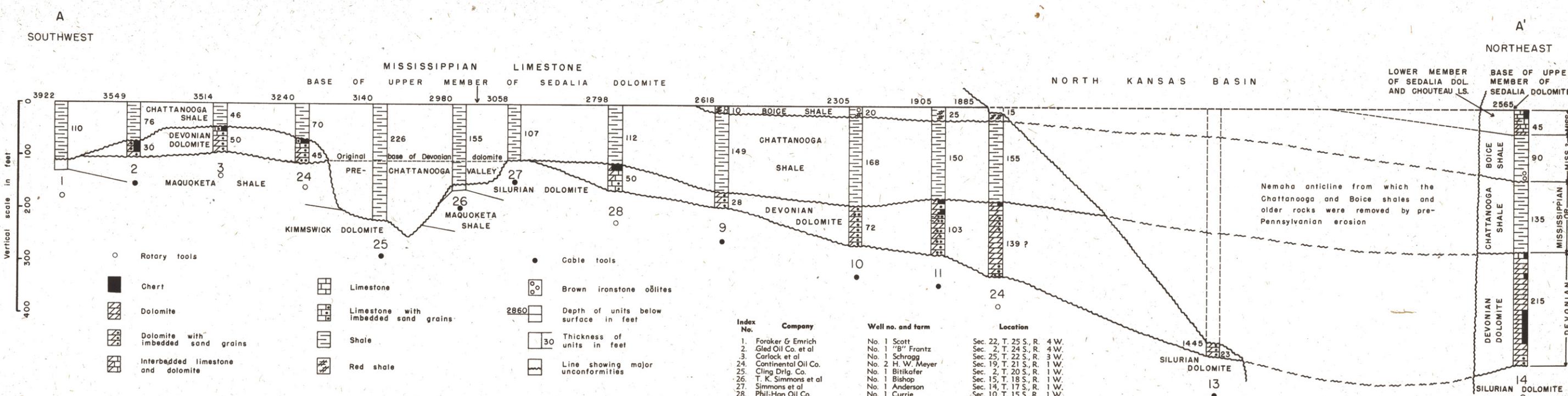
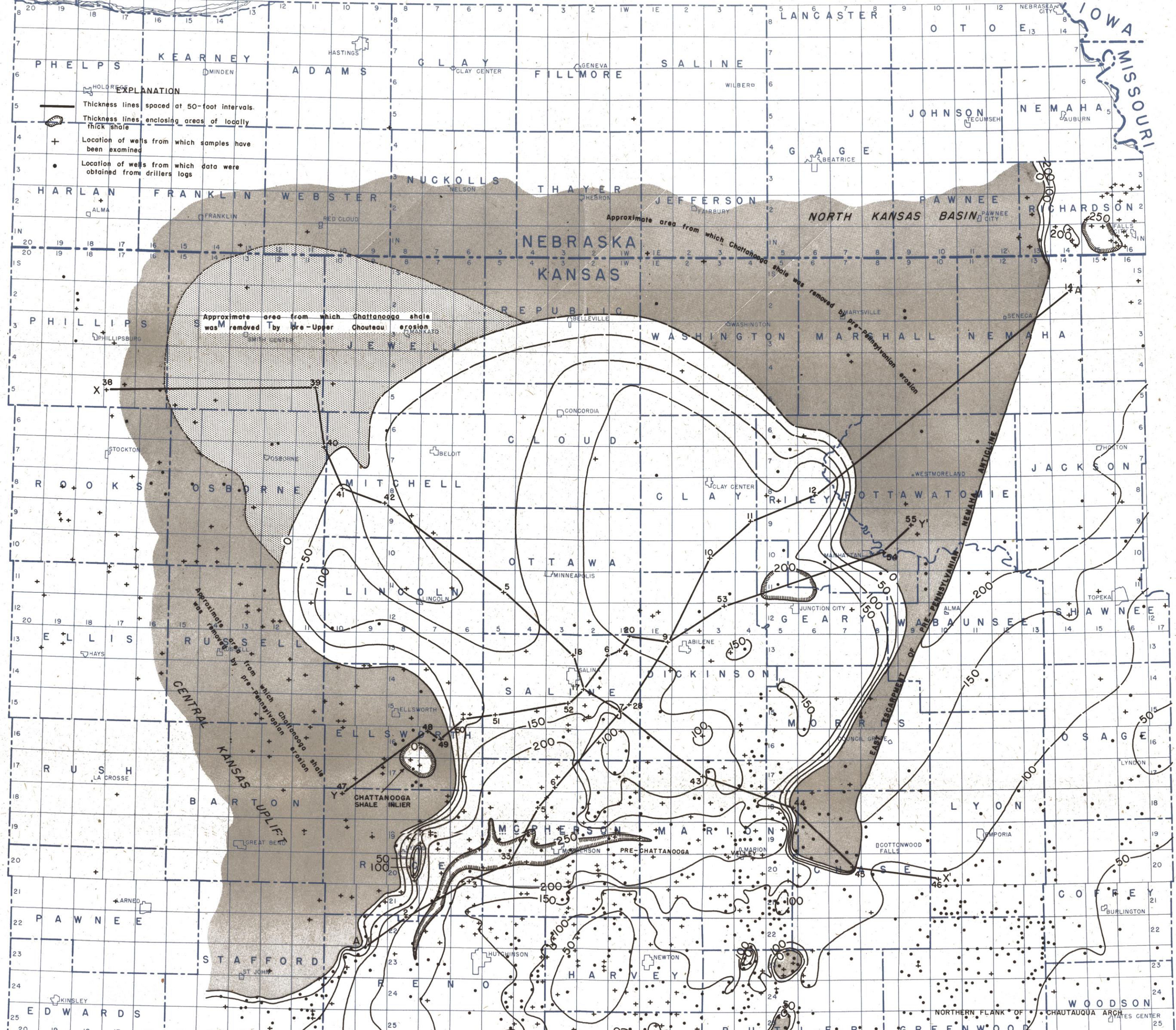
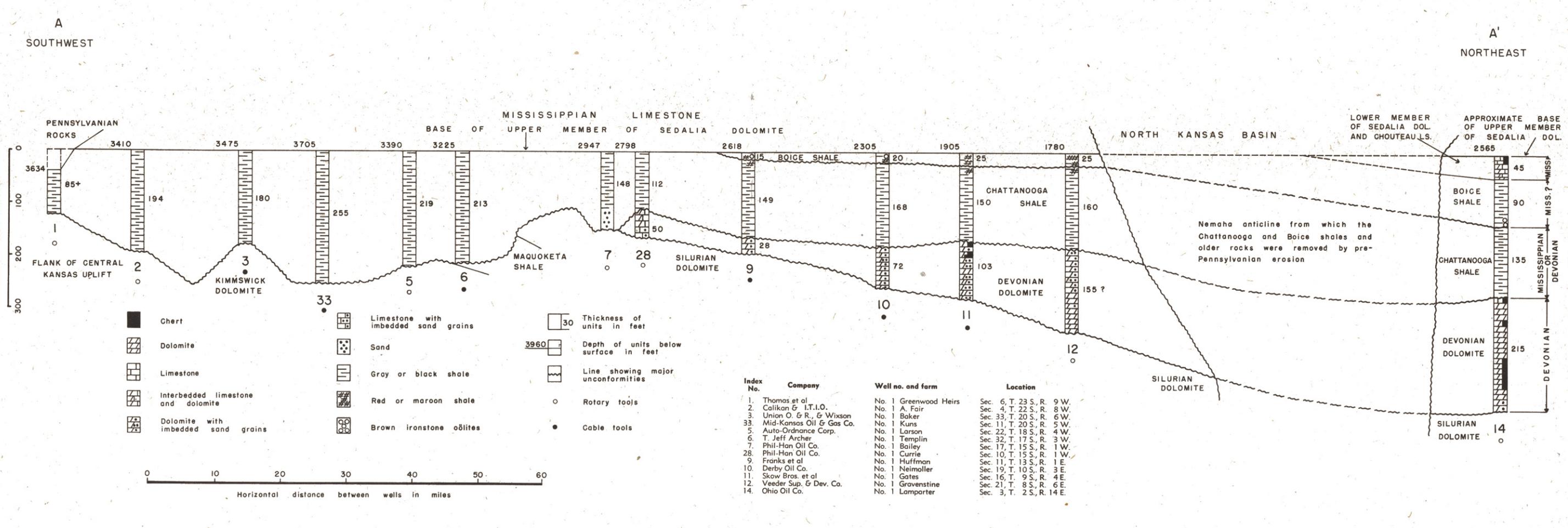


Plate 6

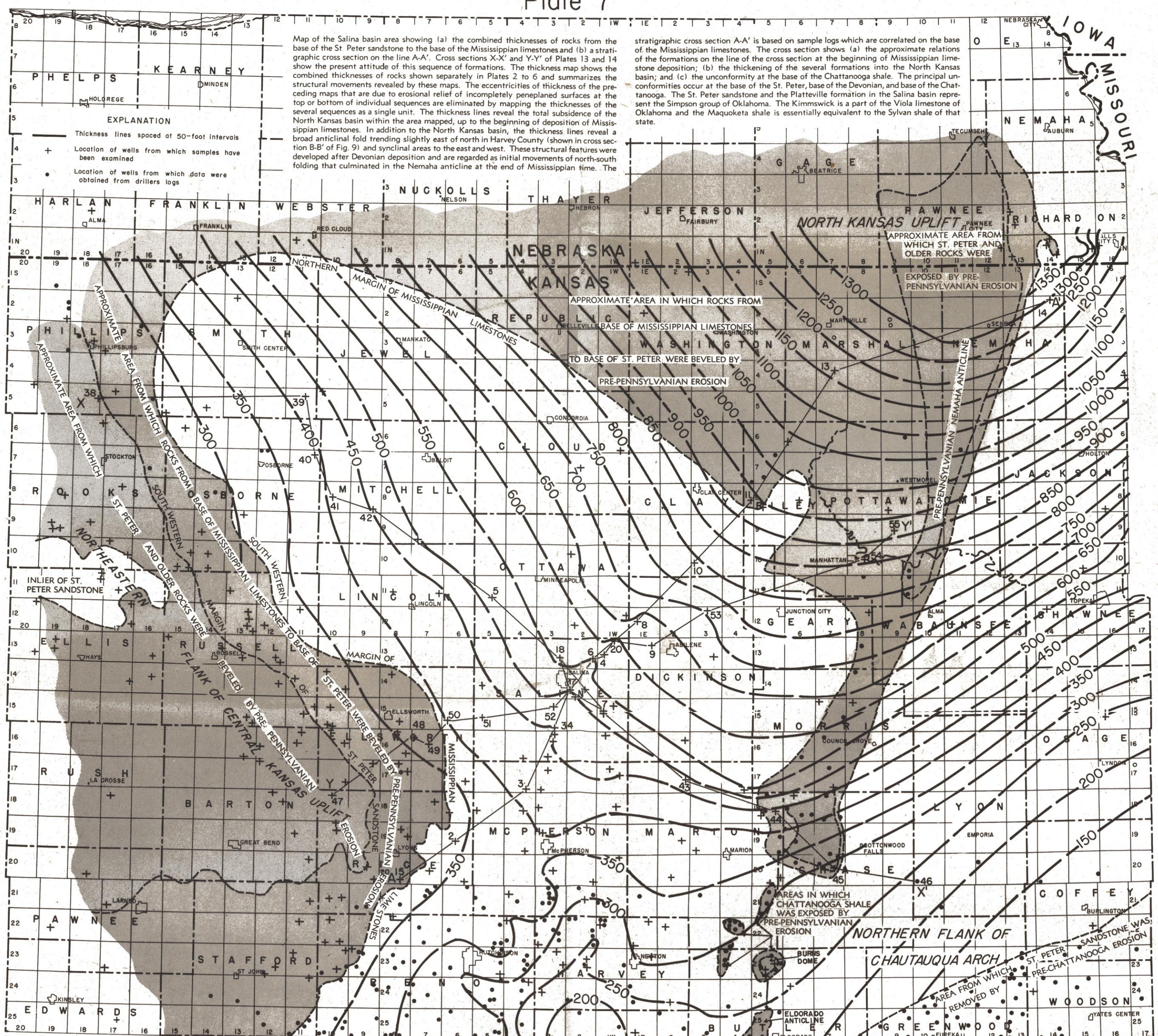


Map of the Salina basin area showing (a) the present thickness and distribution of the combined Chattanooga and Boice shales and (b) a stratigraphic cross section on line A-A'. Cross sections X-X' and Y-Y' of Plates 13 and 14 show the present attitude of these formations. The formerly more widespread Chattanooga shale was reduced in areal distribution toward the northwest by erosion that preceded the deposition of the upper member of the Edgewood in Smith County and adjacent areas. The Chattanooga shale was later restricted by the erosion and beveling that preceded Pennsylvanian deposition. The variations of the

thickness of the Chattanooga shale in the Salina basin area indicate a pre-Chattanooga topography of considerable relief. The greater thickness in Marion and McPherson Counties reveals a well-defined broad open valley joined in Rice County by a tributary from the south. Drainage probably escaped northwest from McPherson County. The stratigraphic cross section which is based on sample logs is correlated on the base of the upper member of the Sedalia dolomite. It shows the thickening of the shale in the pre-Chattanooga



## Plate 7



**A**

**SOUTHWEST**

**NORTH KANSAS BASIN**

**NORtheast**

**PENNSYLVANIAN ROCKS**

**MISSISSIPPIAN LIMESTONE**

**CHOUTEAU LS.**

**Vertical scale in feet**

**Horizontal distance between wells in miles**

**Legend:**

- Chert
- Dolomite
- Öölitic dolomite
- Dolomite with imbedded sand grains
- Interbedded limestone and dolomite
- Limestone
- Öölitic limestone
- Limestone with imbedded sand grains
- Thickness of units in feet
- Depth of units below surface in feet
- Skip in samples
- Rotary tools
- Cable tools

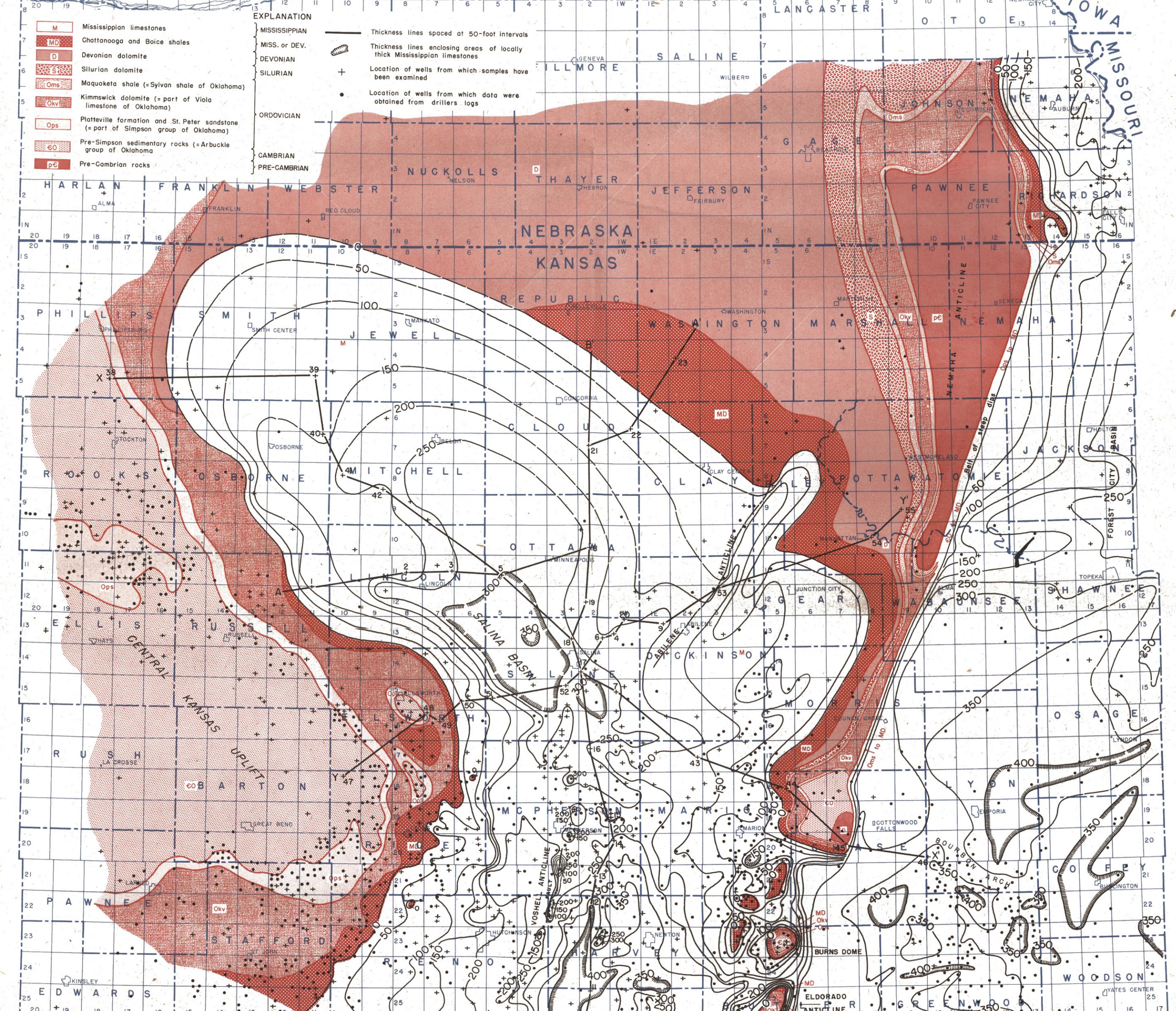
**Index No.**      **Company**      **Well no. and form**      **Location**

15. Ingling & Parker	Sec. 34, T. 20 S., R. 8 W.
2. Field et al.	Sec. 21, T. 19 S., R. 6 W.
3. Loria Oil & Gas Co.	Sec. 35, T. 17 S., R. 4 W.
34. Appleman Co. et al.	No. 1 Erickson
17. Sampson-Deterick	No. 1 Gunnerson
6. Auto-Ordnance Corp.	No. 1 Sudendorf
20. Valley Oil & Gas Co. et al.	No. 1 Ruch
8. Stanolind Oil & Gas	No. 1 Herrington
10. Derby Oil Co.	No. 1 Equitable Life
11. Arkansas Fuel Oil Co.	No. 1 Neimoller
13. B. B. Blair	No. 1 Martin
14. Ohio Oil Co.	No. 1 Cox
	No. 1 Lamparter

**Notes:**

- Flank of Central Kansas uplift from which Chattanooga shale and older rocks were removed by pre-Pennsylvanian erosion.
- Nemaha anticline from which the Chattanooga and Boice shales and older rocks were removed by pre-Pennsylvanian erosion.

Plate 8



Map of the Salina basin area showing (a) the thickness of the Mississippian limestone and the Pennsylvanian basal conglomerate, (b) the pre-Pennsylvanian areal geology, (c) a stratigraphic cross section on the line A-A' showing the attitude of the Mississippian formations at the end of post-Mississippian beveling. Cross section B-B' is shown in Figure 6. Cross section X-X' and Y-Y' of Plates 13 and 14 show the present attitude of Mississippian limestone. The thickness map shows (a) the northeasterly trending Nemaha anticline, from whose northeastern end the Mississippian limestones were eroded; the contemporaneously developed northwesterly trending Salina basin syncline which is recognized by the thickening of the Mississippian limestones beneath the beveled face; and (c) the Central Kansas uplift which continued active. Secondary anticlines paralleling the Nemaha anticline were also developed. The areal geologic map shows the Mississippian formations cropping out in bands on the peneplaned surface on the flanks of the Central Kansas uplift and the Nemaha anticline. The stratigraphic cross section line A-A' is based on sample logs which are correlated on the base of Pennsylvanian rocks. Cross section A-A' shows the attitude and relations of the Mississippian formations at the end of peneplanation in a line extending from southwest to northeast across the center of the Salina basin. The stratigraphic cross section on line B-B' is shown in Figure 6. Important unconformities occur at the base of the Chattanooga shale, at the base of Osage rocks, and at the top of the Mississippian limestones. Less prominent unconformities occur at the base of the Kinderhookian rocks, at the base of the Gilmore City, at the base of the Keokuk, and at the base of the "Warsaw."

