

## STRATIGRAPHY, PETROLOGY AND PETROGRAPHY

### General Overview

Upper Mississippian (Chesterian) and Lower Pennsylvanian (Morrowan) strata in the Ardmore basin consist primarily of shallow to deep marine shelf facies. The focus of this guidebook is on two units within these strata—the Springer Formation and the Primrose Member of the Golf Course Formation. The Springer Formation (which straddles the Mississippian–Pennsylvanian boundary) is composed almost entirely of shales and sandstones, and the overlying Primrose Member of the Golf Course Formation (Morrowan) is composed mostly of sandstone with interbedded shales of variable thickness (Fig. 3).

The Goddard Formation of the Springer Group underlies the Springer Formation (Fig. 3). It is a noncalcareous, fissile, mouse-gray shale containing some discontinuous pale yellowish orange sandstones in the upper 1,000 ft. The shales and sandstones are identical to those of the overlying Springer Formation, except that the sandstones are fewer and thinner. The Goddard Formation is 2,000–2,500 ft thick. It contains one formally named sandstone, the Red Oak Hollow (Elias, 1956) (Fig. 3).

The Springer Formation contains three unnamed shale members and three named sandstone members: (1) the Rod Club Sandstone, at the base; (2) the Overbrook Sandstone; and (3) the Lake Ardmore Sandstone. The three unnamed shale members are identified by their stratigraphic positions above each of the named sandstone

members. The Target limestone, which was named and described by Bennison (1954), is a lentil within the Lake Ardmore Member. Elias (1956) identified more than 40 forms of invertebrate fossils from this limestone, including brachiopods, crinoids, bryozoans, rugose corals, and conodonts. Based on faunal evidence, Straka (1969, fig. 3)

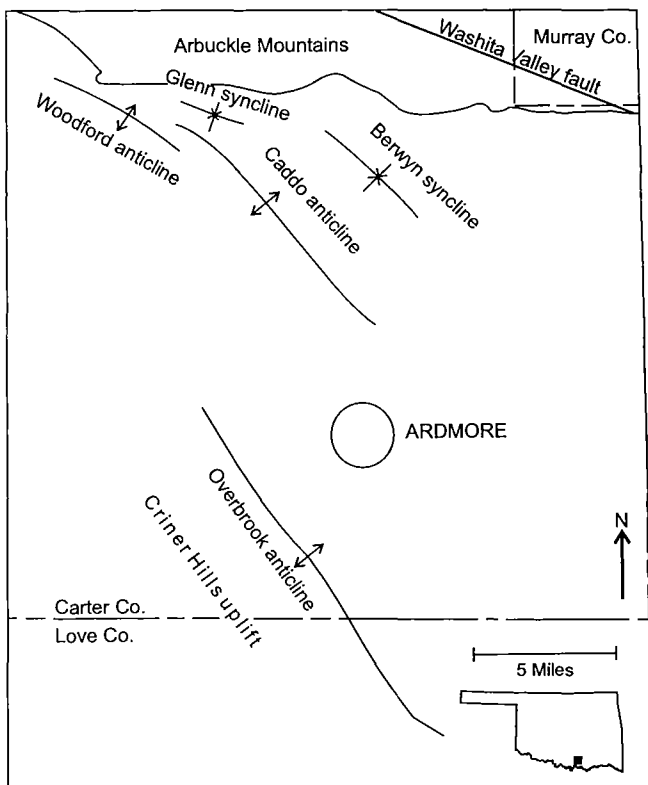


Figure 2. Structural features in, and adjacent to, the field-trip area in the vicinity of Ardmore, Oklahoma.

SYSTEM	SERIES	GROUP	FORMATION	LITHOLOGY	THICKNESS (FT)	MEMBER
PENNSYLVANIAN	Morrowan	Dornick Hills	Golf Course		66	Otterville Limestone
					710–1,205	Gene Autry Shale
					82–133	unnamed shale
					100–360	Primrose Sandstone
					70–500	unnamed shale
					16–500	Lake Ardmore Sandstone
						Target ls. lentil
					234–700	unnamed shale
					45–105	Overbrook Sandstone
					800–1,000	unnamed shale
MISSISSIPPIAN	Chesterian	Springer	Goddard		250–490	Rod Club Sandstone
					1,100	unnamed shale
					50	Red Oak Hollow Sandstone
					1,100	unnamed shale

Figure 3. Generalized stratigraphic column showing the Springer Group and the lower part of the Dornick Hills Group in the Ardmore basin. Explanation of symbols in Appendix 1.