GEOLOGIC MAP OF THE ATHENS QUADRANGLE, HOWARD, PIKE, MONTGOMERY, AND POLK COUNTIES, ARKANSAS

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1994
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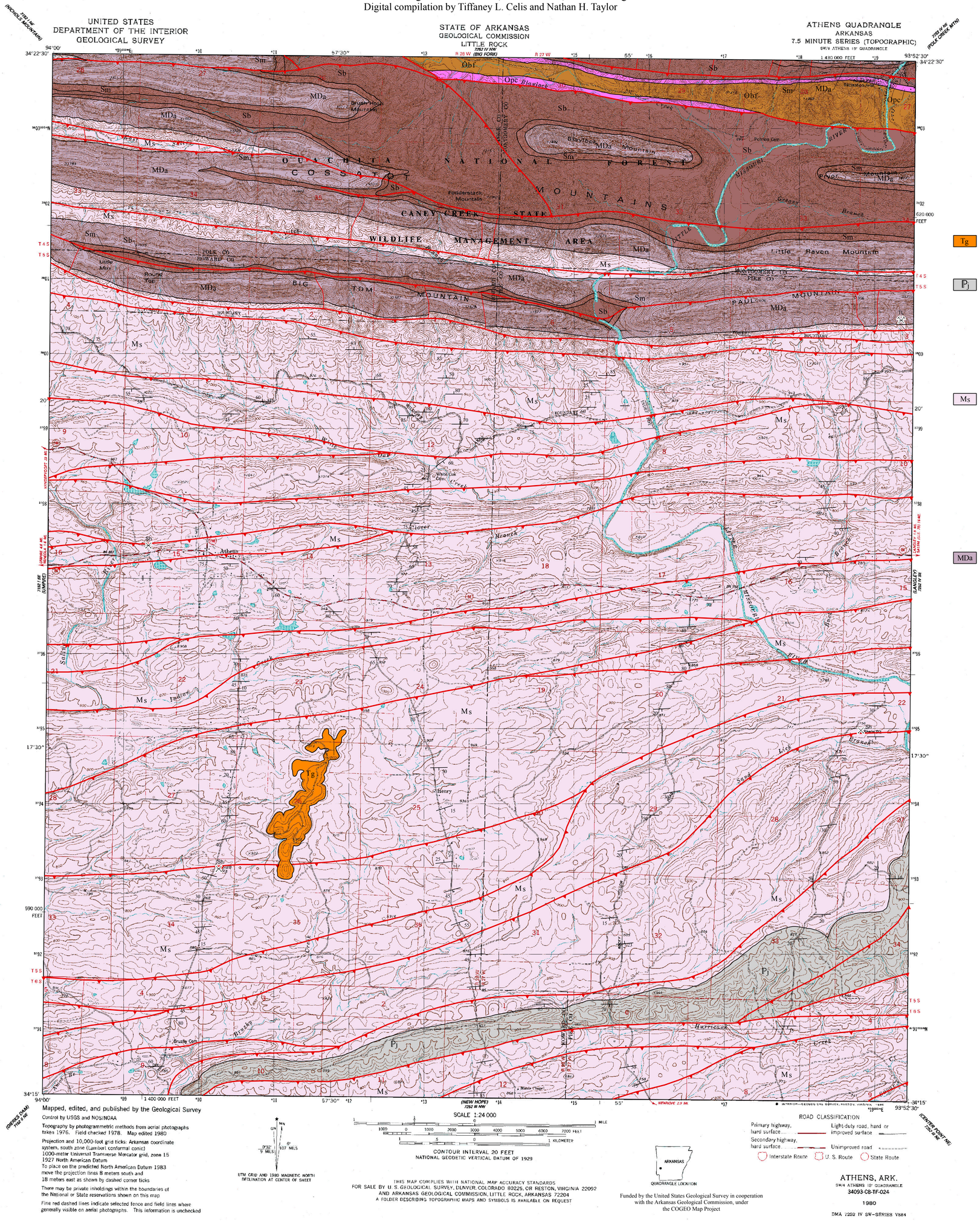

Correlation of Map Units

Tg	Tertiary	CENOZOIC
UNCONFORMITY		
Pj	Pennsylvanian	PALEOZOIC
Ms	Mississippian	
MDa	Devonian	
Sm	Silurian	
Sb		
Opc	Ordovician	
Obf		

Description of Map Units

Tg **Gravel** *(Tertiary)* - Scattered deposits of gravel found on isolated hills lying atop Paleozoic age rocks. This sequence has not been assigned to a specific stratigraphic unity or studied in detail.

Pj **Jackfork Formation** *(Pennsylvanian)* - The Jackfork is thin-to massive-bedded, fine- to coarse-grained, brown, tan, or bluish-gray quartzitic sandstone with subordinate brown silty sandstones and gray-black shale. Toward the north of its outcrop area the shale units of the lower and middle Jackfork take up more of the section and the sandstones are more lenticular, often occurring as chaotic masses in the shale. Minor conglomerates composed of quartz, chert, and metaquartzite occur notably in the southern exposures of the formation. The Jackfork rests conformably on the Stanley. The formation is generally between 3500 to 6000 feet in thickness.

Ms **Stanley Formation** *(Mississippian)* - The Stanley is composed predominantly of grayish-black to brownish-gray shale, with lesser amounts of thin to massive-bedded, fine-grained, gray to brownish-gray feldspathic sandstone. Weathered shale is olive-gray and the sandstone is generally more porous and brown. Interbedded layers of thin black siliceous shale and chert are present and are used to subdivide the formation in other areas. Locally, volcanic tuffs (primarily the Hatton Tuff Member) and a quartzose sandstone-chert conglomerate unit (Hot Spring Sandstone Member) are present in the lower Stanley. Cone-in-cone and calcareous silty concretions are present in the shale. Most of the Stanley is Late Mississippian (Chesterian) as indicated by the presence of conodonts and plant fossils. The formation is a deep-water marine turbidite sequence, derived primarily from a landmass (Llanoria) that existed along the southern margins of the Ouachita trough.

MDa **Arkansas Novaculite** *(Mississippian-Devonian)* - Three Divisions of the Arkanasas Novaculite are recognized. The Lower Division is white massive-bedded novaculite with some interbedded gray shales near its base. The Middle Division is greenish to dark-gray shales interbedded with many thin beds of dark novaculite. The Upper Division is white, thick bedded, and often calcareous.

Sm **Missouri Mountain Formation** *(Silurian)* - The Missouri Mountain represents the Silurian aged rocks found in the west central Ouachita Mountains. The Missouri Mountain consists of shale interbedded with conglomerate, novaculite, and sandstone. Few identifiable fossils have been found in this unit. The unit was deposited in a deep marine environment and is about 300 feet thick.

Sb **Blaylock Formation** *(Silurian)* - The Blaylock consists of tan to gray, fine to medium sandstone interbedded with black fissile shale. Graptolite and trace fossils may be found, but are rare. The thickness of the unit ranges from 5 feet to as much as 1200 feet, and was deposited in a deep marine environment.

Opc **Polk Creek Formation** *(Ordovician)* - The Polk Creek rocks are black, sooty, fissile, shale with minor black chert traces of gray quartzite and limestone. Graptolites are common in most of the shales in the formation. Its thickness ranges from about 50 to about 225 feet.

Obf **Bigfork Formation** *(Ordovician)* - The Bigfork consists of thin bedded, dark gray, cryptocrystalline chert interbedded with varying amounts of black siliceous shale, calcareous siltstone, and dense, bluish-gray limestone. Fossils are rare but fragments of brachiopods, crinoids, sponges, conodonts, and graptolites have been reported. The unit in Arkansas ranges from about 450 feet thick in the northern Ouachitas to about 750 feet thick in the southern Ouachitas.

Symbols

- Contact
- Thrust Fault
- Tear Fault
- 45° Strike and Dip
- Pit
- Abandoned Pit (Sh - Shale)
- Abandoned Mine (TL - Tripoli)

References

Haley, B. R., and Stone, C. G., 1976, Geologic Map of the Athens Quadrangle, Arkansas: Arkansas Geological Commission, scale 1:62,500.

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Topography by photogrammetric methods from aerial photographs taken 1976. Field checked 1978. Map edited 1980

Projection and 10,000-foot grid ticks: Arkansas coordinate system, south zone (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 15
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 8 meters south and 18 meters east as shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
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AND ARKANSAS GEOLOGICAL COMMISSION, LITTLE ROCK, ARKANSAS 72204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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ATHENS, ARK.
SW/4 ATHENS 15' QUADRANGLE
34093-C8-TF-024
1980
DMA 7252 IV SW-SERIES V884