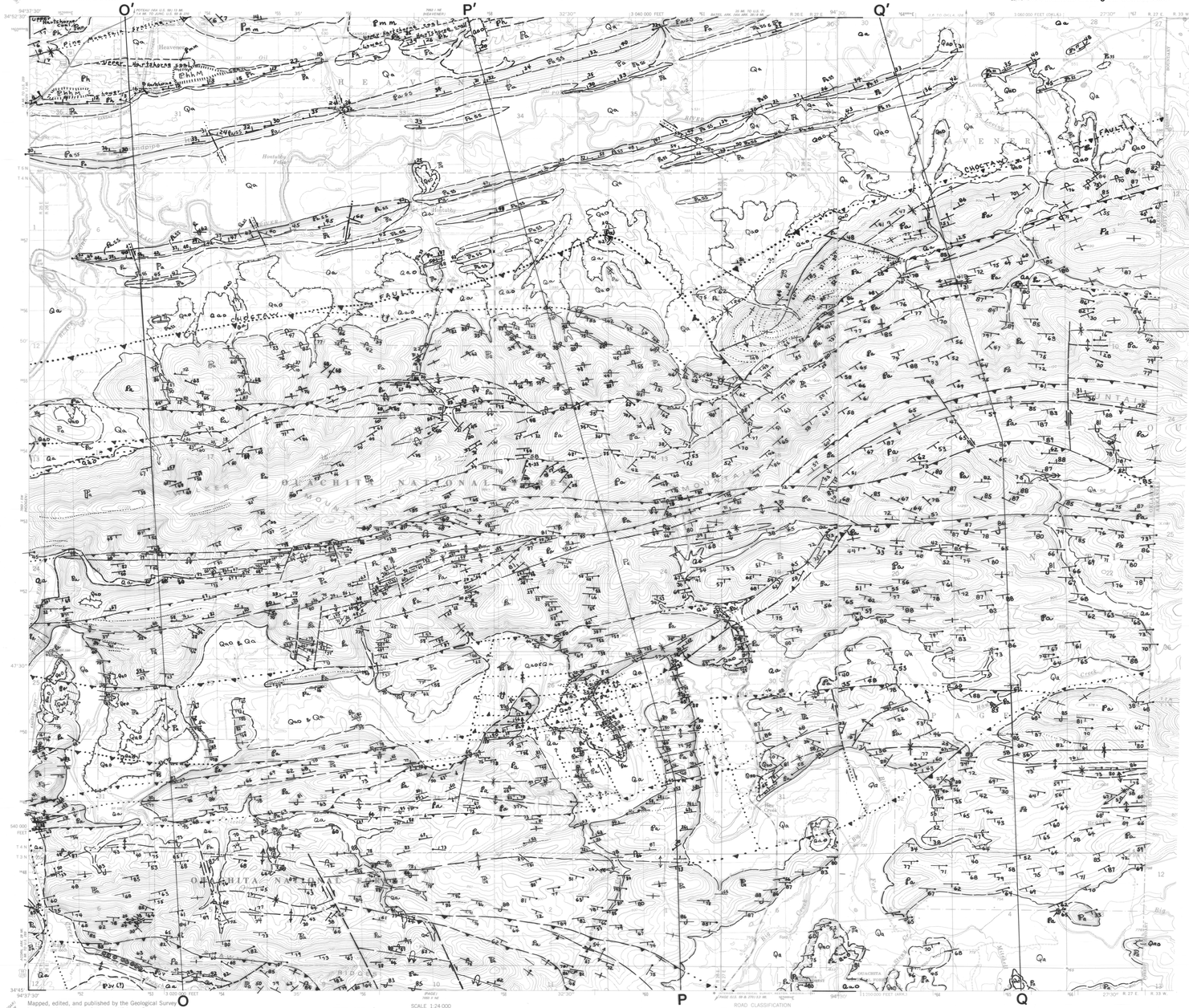
OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

Prepared in cooperation with the U.S. Geological Survey
and the Arkansas Geological Commission

Oklahoma Geologic Quadrangle **OGQ-14**
Geologic Map of the Hontubby and Loving 7.5' Quadrangles
(previously Open-File Report OF2-93)

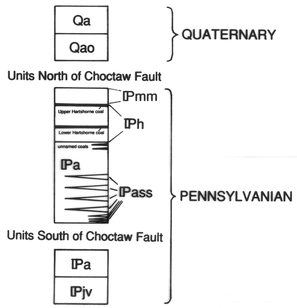


Geology by Colin Mazengarb and LeRoy A. Hemish, 1991

GEOLOGIC MAP OF THE HONTUBBY AND LOVING QUADRANGLES, LE FLORE COUNTY, OKLAHOMA

By
Colin Mazengarb and LeRoy A. Hemish
1993

CORRELATION OF MAP UNITS



SYMBOLS

- CONTACT--Dashed where approximately located; ticks show terrace slopes
- COAL BOUNDARY--Approximate outcrop boundary of coal bed (named on map); triangle indicates exposure of coal; queried where questionable
- MARKER BED
- THRUST FAULT--Sawteeth on upper plate; dashed where approximately located; dotted where concealed; queried where questionable
- NORMAL FAULT--Hachures on apparently downthrown side
- FAULT--Inferred, sense of offset unknown
- FAULT--Arrows show relative horizontal movement; dashed where approximately located; dotted where concealed; queried where questionable
- ANTICLINE--Showing crestline, arrow shows direction of plunge if determined; dashed where approximately located; dotted where concealed; queried where questionable
- SYNCLINE--Showing troughline, arrow shows direction of plunge if determined; dashed where approximately located; dotted where concealed; queried where questionable
- OVERTURNED ANTICLINE--Showing crestline; limbs diverge in direction of arrows; dashed where approximately located; dotted where concealed
- OVERTURNED SYNCLINE--Showing troughline; arrows show direction of convergence of limbs; dashed where approximately located; dotted where concealed; queried where inferred
- MINOR ANTICLINE--Showing direction and amount of plunge if determined
- MINOR SYNCLINE--Showing direction and amount of plunge, if determined
- CONTORTED BEDS--Arrow shows direction of plunge where known
- MINED-OUT AREA

OUTCROP DATA

- Leader to location of measurement
- Strike and dip of beds, facing direction unknown
- Strike of beds, dip value unknown
- Strike of beds, dip direction unknown
- Vertical beds, facing direction unknown
- Strike and dip of beds, upright
- Vertical beds, ball indicates top of beds
- Strike and dip of beds, overturned
- Outcrop observed
- Limestone or dolomite cobble or boulder in Johns Valley Formation
- Siliceous shale bed in Atoka Formation
- Facing (younging) direction, away from ball
- Bedrock orientation projected onto section lines (cross-sections only)

OIL AND GAS WELLS (Cross section Q-Q' only)

- Dry hole, abandoned
- Gas well

DESCRIPTION OF MAP UNITS

Qa ALLUVIUM (QUATERNARY)--Gravel, sand, silt, and clay on flood plains of present-day streams

Qao OLDER ALLUVIUM (QUATERNARY)--Subangular to subrounded cobbles, gravel, sand, and silt, forming a veneer, generally less than 6 ft (2 m) thick, on the surfaces of terraces up to 180 ft (55 m) above the beds of present-day streams

UNITS PRESENT NORTH OF CHOCTAW FAULT

Pmm McALESTER FORMATION, McCURTAIN SHALE MEMBER (PENNSYLVANIAN)--Predominantly dark-gray to black, blocky shales containing abundant ironstone concretions. Minimum thickness 400 ft (120 m)

Ph HARTSHORNE FORMATION (PENNSYLVANIAN)--Grayish-orange (10YR7/4) to moderate-reddish-orange (10YR6/6) to very light gray (N8) very fine to fine-grained, ripple-marked, cross-bedded, thin-bedded to massive, bioturbated sandstone, containing abundant upright Calamites; interstratified with silty, medium-gray (N5) to grayish-black (N2) shale containing sideritic nodules. Includes the Lower and Upper Hartshorne coal beds. Surface-mined areas in Lower Hartshorne coal in northwest part of Hontubby quadrangle designated PhtM. Thickness: 250 - 325 ft (76 - 100 m)

Pa ATOKA FORMATION (PENNSYLVANIAN)--Predominantly poorly exposed, olive-gray (5Y3/2) to grayish-olive (10Y4/2), slightly silty, noncalcareous shale (Pa) containing sideritic nodules. Includes numerous, continuous to discontinuous, ridge-forming moderate-yellowish-brown (10YR5/4) to dark-yellowish-orange (10YR6/6), very fine grained, silty, micaceous sandstones (Pass) containing plant fragments, sole markings, and trace fossils. Includes grayish-black (N2), fissile shale beds, and two unnamed coal beds in upper part. Sandstone units variable in thickness, generally thinly parallel-bedded with interstratified siltstones and shales; commonly ripple-marked; contacts usually gradational. Approximately 7,500 ft (2300 m) exposed north of Choctaw fault

UNITS PRESENT SOUTH OF CHOCTAW FAULT

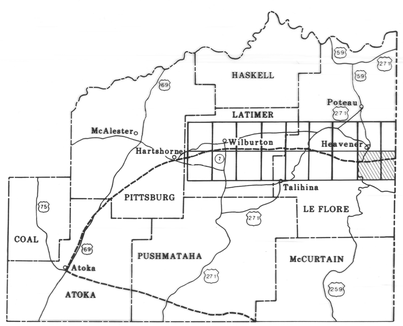
Pa ATOKA FORMATION (PENNSYLVANIAN)--Predominantly alternating sandstone and shale (mudstone) sequence dominated by shale. Shale is olive-gray (5Y3/2) to grayish-olive (10Y4/2), slightly silty, noncalcareous, and poorly laminated. Single siliceous shale bed, 1.2 in. (3 cm) thick (marked on map). Sandstone is light-olive-gray (5Y5/2) and yellowish-gray (5Y7/2) where fresh, and grayish-orange (10YR7/4) where weathered. Mostly fine-grained, rarely medium grained, poorly to moderately sorted, noncalcareous, and composed predominantly of quartz, with minor feldspar, lithic fragments, and conspicuous white mica. Sandstone beds vary from several inches to several ft thick and average about 2 ft (60 cm). Amalgamated beds are common, forming resistant ridges and dip slopes, some of which are depicted (as marker beds) on the map. Sandstones, which are interpreted as turbidites, contain well developed sedimentary structures, including impressive sole structures (flute, groove and load casts, trace fossils), parallel and ripple cross lamination, and water expusion (convolutions, dish and pillar) features. The formation is absent of macrofossils except for local concentrations of plant fragments on bedding planes. Thickness of the formation is uncertain, but a minimum 10,600 ft (3200 m) is estimated.

Maximum exposed thickness south of Choctaw fault approximately 11,000 ft (3400m); top not exposed

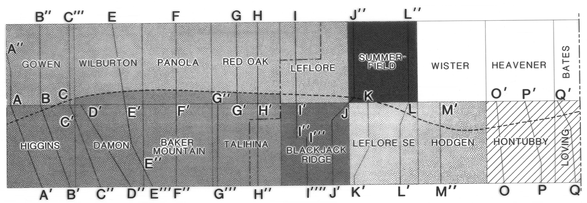
Pjv JOHNS VALLEY FORMATION (PENNSYLVANIAN)--Predominantly poorly exposed, olive-gray (5Y3/2), noncalcareous, slightly silty shale and mudstone. Some shale beds in upper part of formation are dark-gray (N3) to grayish-black (N2), fissile and flaky. Other beds contorted, appear pervasively sheared. Contains thin beds of noncalcareous siltstone and a well-developed, 6 - 8 ft (2 - 3 m)-thick sandstone bed at top of formation. Sandstone is pale-yellowish-brown (10 YR6/2) to grayish-orange (10 YR7/4) to moderate-orange-pink (5YR8/4) to grayish-orange-pink (5YR7/2), very fine to fine- to medium-grained, noncalcareous, medium- to thick-bedded; in places includes a 1 ft (0.3 m)-thick calcareous, grayish-red (10R4/2), cross-bedded, coarse-grained conglomeratic sandstone bed at base. Flute casts and load casts common on soles.

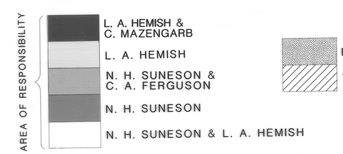
Exotic rock types ranging from gravel to boulder size are abundant in conglomerate as well as in shale beds. Included are weathered and rounded cherty carbonates (many boulder size), as well as reworked conglomerates.

Exposed only in southwest part of Hontubby quadrangle. Minimum thickness of formation is 850 ft (200 m)



LOCATION OF QUADRANGLE





INDEX TO QUADRANGLES, CROSS SECTIONS, AND AREA OF RESPONSIBILITY