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GEOLOGIC MAP OF THE NORTHUMBERLAND PASS AREA, TOQUIMA RANGE, NEVADA

Kenneth S. Coles

This information should be considered preliminary.
It has not been edited or checked for completeness
or accuracy.

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Notes to accompany
Geologic map of the Northumberland Pass area,
Toquima Range, Nevada

compiled by

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The geologic map (Plate A) shows the bedrock geology of a portion of the northern Toquima Range, Nevada. It is part of a dissertation on this area (Coles, 1988) and was compiled from the published reports cited on the map, with remapping of an area in the center of the map and brief reconnaissance elsewhere. The structure sections (Plate B) are my interpretations of the map.

Although the study focused on the Prospect and Pinecone sequences in the Toquima Range, I compiled the distribution of other units to better interpret their relationships (Plate B). The maps of Crawford (1958) and Kay and Crawford (1964) were not presented on a topographic base. Stereo pairs of air photos provided a means of transferring Kay and Crawford's work to 1:24,000 base maps by matching up the drainage patterns shown on both maps. The precision of location of this transferred information, however, is uncertain. I did not field check most of the contacts compiled on Plate A, but depicted high-angle faults between Paleozoic units where they were shown in the original sources. As a result many high-angle faults show apparent reversals of dip and other inconsistencies. While this presentation may be unsatisfying, it reflects the uncertainties regarding the geologic relations at present.

Kay and Crawford (1964) inferred the presence of low-angle thrust faults in the northern half of the Toquima Range to explain the present distribution of Paleozoic strata. The thrust faults themselves are rarely exposed and

commonly are offset by Cenozoic high-angle normal faults. The relative timing of movement on the thrust faults is poorly known in most cases.

Upper Devonian rocks of the Pinecone sequence lie upon Silurian strata of the Prospect sequence in Ella May Canyon (Plates A, B) according to new fossil data (Coles, 1988). The interpreted fault contact between these units, which may correlate to the Roberts Mountains thrust elsewhere in Nevada, thus displays a younger-on-older relation. This conflicts with a simple thrust interpretation, which should place older rocks upon younger. Nevertheless, imbrication of the Pinecone sequence, documented by Coles (1988), indicates significant thrust shortening at some time in its history. At least some of the folds in the Pinecone sequence are Mississippian in age, and I believe the imbrication is of the same age. Possibly faulting of younger age altered the distribution of the Paleozoic thrust sheets and the age relations across the older thrust faults.

Plate A shows the location of the following, all of which are discussed in detail in Coles (1988), which also summarizes regional geology and previous work in the area:

a measured stratigraphic section in the Pinecone sequence,
Plate C, a 1:1,000 scale plane table map,
Figures 2-24 and 2-31, outcrop photos, and
Plate F, a line drawing of folds on the wall of one of the canyons.

BIBLIOGRAPHY

Publications related to this study

Coles, K. S., 1986, Deposition and deformation of a mid-Paleozoic siliceous sequence, central Toquima Range, Nevada: Geological Society of America Abstracts with Programs, v. 18, p. 96.

Coles, K. S., 1988, Stratigraphy and structure of the Pinecone sequence, Roberts Mountains allochthon, Nevada, and aspects of mid-Paleozoic sedimentation and tectonics in the Cordilleran geosyncline [Ph.D. dissertation]: New York, Columbia University, 246 p., 6 plates [University Microfilms number 8827555].

Coles, K. S., 1989, Late Devonian sedimentation in the eastern Great Basin: Is it a consequence of Antler tectonic activity?: Geological Society of America Abstracts with Programs, v. 21, no. 5, p. 68.

Coles, K. S., and Snyder, W. S., 1985, Significance of lower and middle Paleozoic phosphatic chert in the Toquima Range, central Nevada: Geology, v. 13, pp. 573-576.

Coles, K. S., and Varga, R. J., 1988, Early to middle Paleozoic phosphogenic province in terranes of the southern Cordillera, western United States: American Journal of Science, v. 288, pp. 891-924.

Coles, K. S., Snyder, W. S., Bond, G. C., and Kominz, M. A., 1989, Late Devonian history of the Cordilleran shelf in Nevada and Utah: Sedimentation and tectonics prior to the Antler orogeny: submitted to Basin Research.

Sources for map

Crawford, J. P., 1958, Structure and stratigraphy of the Northumberland-Mill Canyon area, northern Toquima Range, Nevada: [Ph.D. dissertation] Columbia University, New York, 59 p.

Kay, M., and Crawford, J. P., 1964, Paleozoic facies from the miogeosynclinal to the eugeosynclinal belts in thrust slices, central Nevada: Geological Society of America Bulletin, v. 75, p. 425-454.

Kleinhampl, F. J., and Ziony, J. I., 1985, Geology of northern Nye County, Nevada: Nevada Bureau of Mines and Geology Bulletin 99A, 172 p.

Laule, S. W., 1978, A reinterpretation of the Permian Wildcat Peak Formation, central Nevada: [M.S. dissertation] Reno, University of Nevada, 90 p.

McKee, E. H., 1976, Geology of the northern part of the Toquima Range, Lander, Eureka, and Nye Counties, Nevada: U.S. Geological Survey Professional Paper 931, 49 p.

Papke, K. G., 1984, Barite in Nevada: Nevada Bureau of Mines and Geology Bulletin 98, 125 p.

Rye, R. O., Shawe, D. R., and Poole, F. G., 1978, Stable isotope studies of bedded barite at East Northumberland Canyon in Toquima Range, central Nevada: Journal of Research of the U.S. Geological Survey, v. 6, p. 221-229.

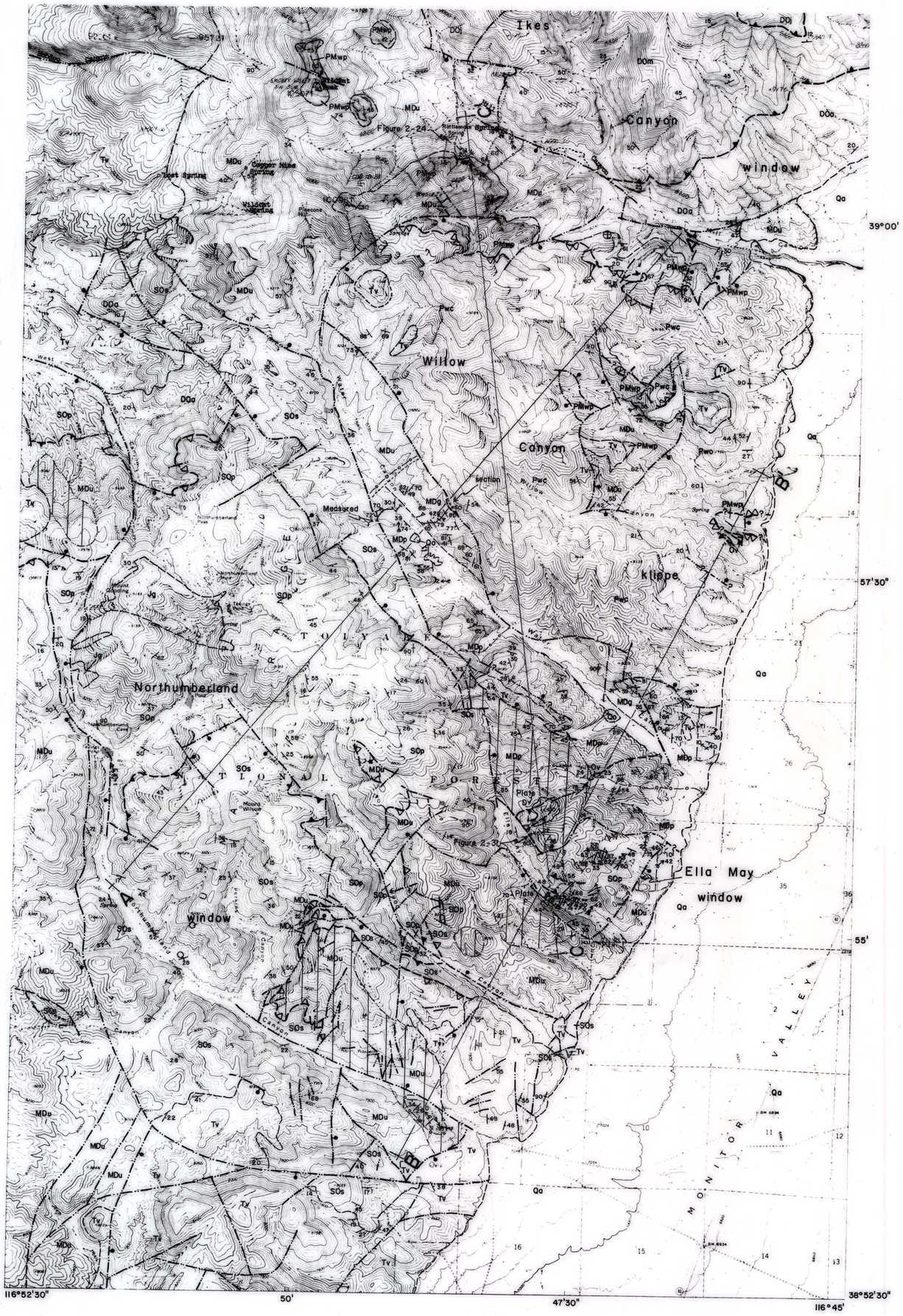
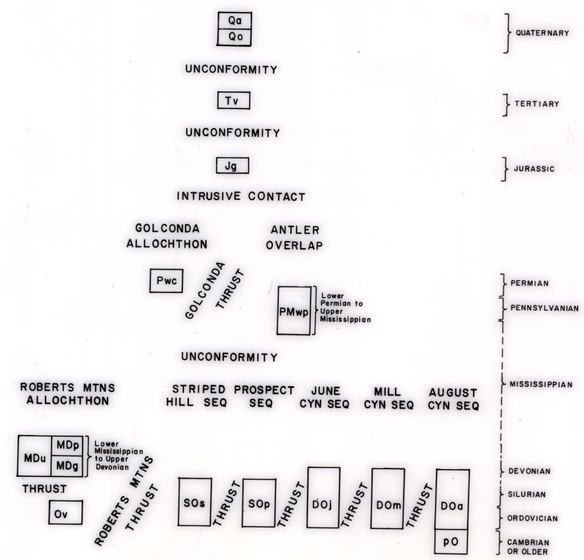


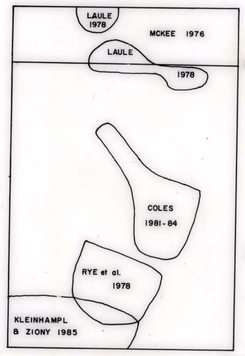
PLATE A

CORRELATION OF MAP UNITS



SOURCES OF DATA

Modified from the following:
Entire area: Crawford, 1958; Kay & Crawford, 1964; additions by K. Coles, 1981-84. Barite: Papke, 1984.
Also as shown:

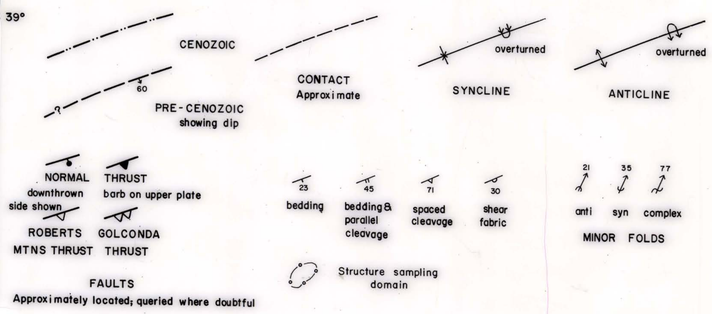


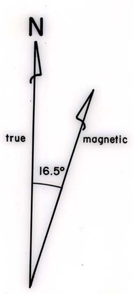
Topographic base from Northumberland Pass 7-1/2' quadrangle and preliminary 7-1/2' edition of SE Wildcat Peak quadrangle, US Geological Survey (1971 & 1960).

DESCRIPTION OF MAP UNITS

- **Qa** ALLUVIUM (QUATERNARY)
- **Qo** OLD ALLUVIAL DEPOSITS (QUATERNARY)
- **Tv** VOLCANIC AND SEDIMENTARY ROCKS (TERTIARY)
- **Jg** NORTHUMBERLAND INTRUSION (LATE JURASSIC) Mainly granodiorite.
- **Pwc** WILLOW CANYON FM. (PERMIAN & POSSIBLY OLDER)
- **PMwp** WILDCAT PEAK FM. (LATE MISSISSIPPIAN TO EARLY PERMIAN)
- **MDu** PINECONE SEQUENCE (LATE DEVONIAN TO EARLY MISSISSIPPIAN) Undivided
  - **MDp** Phosphatic chert unit
  - **MDg** Blue-gray chert unit
  - Zone of stratiform barite occurrence
- **Ov** VININI FM. (ORDOVICIAN) Quartzite.
- **SOs** STRIPED HILL SEQUENCE (ORDOVICIAN & SILURIAN) Includes (from top) Masket Shale, Gatecliff Fm. & Perkins Canyon Fm.
- **SOp** PROSPECT SEQUENCE (ORDOVICIAN & SILURIAN) Includes (from top) Masket Shale (base shown locally), Gatecliff Fm. & Pogonip Group
- **DOj** JUNE CANYON SEQUENCE (ORDOVICIAN TO DEVONIAN) Includes (from top) Tor Limestone, Roberts Mtns Fm., unnamed limestone, Antelope Valley Limestone & Ninemile Fm.
- **DOm** MILL CANYON SEQUENCE (ORDOVICIAN TO DEVONIAN) Includes unnamed units and (from top) McMonnigal Limestone, Roberts Mtns Fm., Antelope Valley Limestone & Ninemile Fm.
- **DOa** AUGUST CANYON SEQUENCE (ORDOVICIAN TO DEVONIAN) Includes (from top) Masket Shale, Gatecliff Fm., Caesar Canyon Limestone & Antelope Valley Limestone.
- **pO** CAMBRIAN AND PRECAMBRIAN ROCKS In subsurface

MAP SYMBOLS





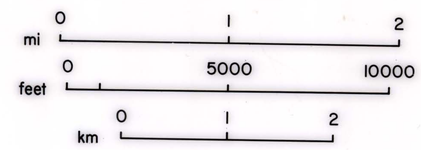
DECLINATION, 1971

GEOLOGIC MAP OF NORTHUMBERLAND PASS AREA, TOQUIMA RANGE, NEVADA

Kenneth S. Coles, compiler

1987

SCALE 1:24,000



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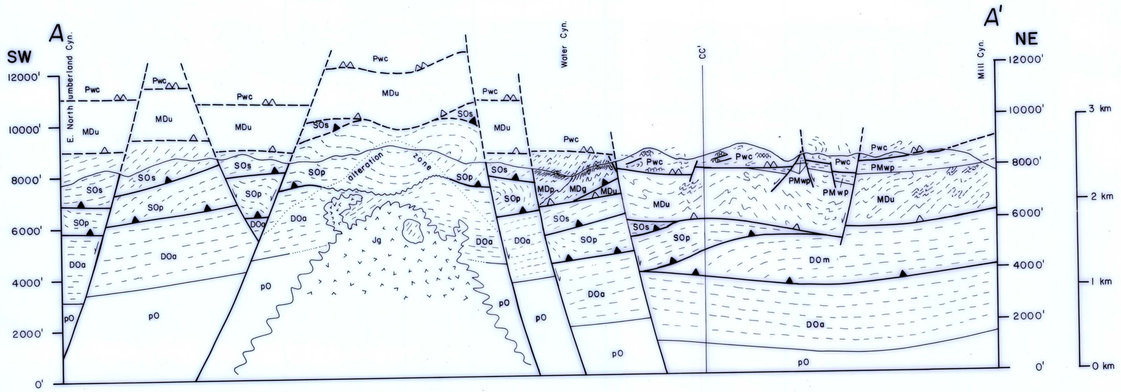

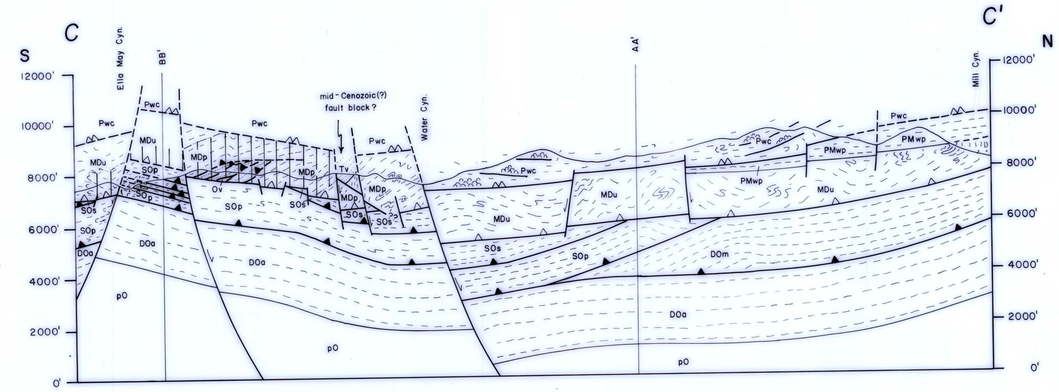

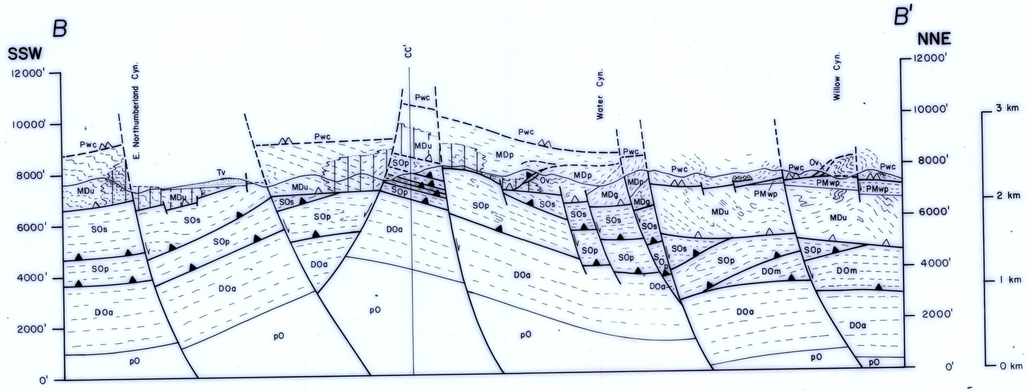

GEOLOGIC CROSS SECTIONS OF NORTHUMBERLAND PASS AREA, TOQUIMA RANGE, NEVADA

Structure shown at depth is diagrammatic; symbols given on map

SCALE 1:24,000
HORIZONTAL = VERTICAL

0 — 2 — 4 km

0 — 12000 feet

0 — 1 — 2 mi

PLATE B

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