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STRATIGRAPHIC AND STRUCTURAL EVIDENCE FOR COMPRESSIONAL TECTONICS IN THE ANCESTRAL ROCKY MOUNTAINS, COLORADO AND UTAH

HOY, Richard G. *, and RIDGWAY, Kenneth D.

Dept. of Earth and Atmos. Sci., Purdue University, 1397 CIVL, West Lafayette, IN 47907-1397
ghoy@chevrontexaco.com

*current address: ChevronTexaco Exploration and Production Technology Company, Bellaire, TX 77401

New evidence from the Pennsylvanian-Permian sedimentary deposits of the Central Colorado trough (CCT) suggests that compressional tectonic forces were active during the Ancestral Rocky Mountain orogeny. The CCT was a narrow, north-south trending basin bordered by the Uncompahgre Uplift on the west, and the Ancestral Front Range and Apishapa uplifts on the east. The middle Pennsylvanian Minturn Formation and late Pennsylvanian-Permian Sangre de Cristo Formations were deposited in the southern part of the CCT. Data collected and analyzed from these formations include geologic mapping, detailed measured stratigraphic sections, paleocurrent indicators, isopach maps, and structural cross-sections. Evidence for syndepositional contractile deformation include: 1) the Gibson Peak growth syncline in the footwall of the Crestone thrust fault, which formed as a result of syndepositional rotation of the Crestone Conglomerate during thrust displacement, 2) the Sand Creek thrust fault, which cuts the lower Crestone Conglomerate and is covered by younger deposits of the Crestone Conglomerate, and 3) an angular unconformity in the Sangre de Cristo Formation at Badger Creek, which separates folded, truncated strata from overlying tabular deposits. The thickest sedimentary fill of the CCT is located in the footwall of the Sand Creek-Crestone thrust fault system. Displacement along the west-dipping Sand Creek and Crestone faults, therefore, appears to not only have controlled the uplift of the southern part of the Uncompahgre Uplift, but basin subsidence in the CCT as well. The Apishapa Uplift probably was a forebulge that formed in response to crustal loading along the western margin of the CCT. Data and interpretations from the southern CCT agree with data from other parts of the northern ancestral Rocky Mountain region. The thickest Pennsylvanian-Permian deposits in the Paradox basin, northern CCT (Eagle basin), and Denver embayment all lie adjacent to major basement thrust or reverse faults that controlled the uplift of the Uncompahgre Uplift and Ancestral Front Range. Orientation and displacement direction of these faults suggest a regional compressional direction oriented northeast-southwest might have been present during formation of the northern Ancestral Rocky Mountains.