

CORRELATION OF PRE-MANCOS, POST-WEBER FORMATIONS, NORTHWESTERN COLORADO

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INTRODUCTION

The purpose of this paper is to correlate the upper Paleozoic and Mesozoic strata of Northwestern Colorado from the Wilson Creek oil field to a measured section on King Mountain, Routt County, Colorado. This information, presented as a stratigraphic cross section, is included in the pocket at the back of this guidebook.

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STRATIGRAPHY

Pennsylvanian

The Schoolhouse tongue of the Weber formation, as originally deposited, probably covered the entire area of Northwestern Colorado, thickening regionally westward. However, because of subsequent erosion during the development of a major unconformity (noted by Murray, 1949, in the McCoy area) at the base of the State Bridge formation, local variations in the regional pattern are evident; that is, the unit thickens eastward from 95 feet in the Wilson Creek No. 20 well to 150 feet in the Iles Dome well, and is not present either at the Beaver Creek well or at King Mountain. Its thickness of 200 feet in the Poose Creek well is considered excessive due to steep dips in the subsurface. The depositional environment was marine littoral.

Permian

The Phosphoria (?) formation is present throughout the area studied. It consists primarily of red to maroon shale and siltstone interbedded with minor but persistent beds of dolomite and limestone. Some gypsum beds are present. The formation thins eastwardly from 105 feet at the Wilson Creek No. 20 well to 80 feet at the outcrop on King Mountain. The upper dolomite (see enclosure) is believed to be the South Canyon Creek dolomite of Bass and Northrop (1950). The environment of deposition was at least in part, shallow water marine. In the McCoy area this formation is included in the basal State Bridge formation.

Triassic

The Moenkopi formation thickens irregularly eastward from 480 feet at the Wilson Creek No. 20 well to 680 feet at the outcrop on King Mountain. At Wilson Creek No. 20, it is primarily green shale and siltstone and is characterized by abundant pyrite. The basal part is dolomitic and suggestive of "Dinwoody formation" lithology. Eastwardly the green coloration gives way to red; this is accompanied by a marked decrease in the amount of pyrite. A basal gypsum member is present in all sections except the Wilson Creek No. 20 well. The environment of deposition was possibly near-shore marine with reducing conditions off-shore. In the McCoy area this formation constitutes the major part of the State Bridge formation.

The Shinarump (?) conglomerate unconformably overlies the Moenkopi formation and is a persistent unit that varies in thickness from 38 to 240 feet. Primarily it is a pebble conglomerate, but contains considerable amounts of maroon shale. Unusual lithologies such as shale pebble conglomerates and features such as bleached mud-cracked shale occur in minor amounts but are characteristic of the formation in this area. There is a possibility that rocks called Shinarump (?) in this paper may be correlative with the Mossback sandstone of Utah. The depositional environment was probably fluvial and subaerial—subaqueous mudflat.

The Chinle formation conformably overlies the Shinarump and varies in thickness from 260 feet to 550 feet. The lithology is fairly consistent throughout the area studied and is red siltstone and shale interbedded with minor amounts of red sandstone. Limestone and limestone pebble conglomerate are present and may, in local areas, serve as good marker beds. The depositional environment was probably fluvial and lacustrine.

Jurassic

The Entrada sandstone thins from 360 feet at the Wilson Creek No. 20 well to 22 feet at King Mountain, where variation in thickness from 22 feet to 220 feet was noted. This local variation in thickness is attributed to the effects of the major unconformity at the base of the formation. The maximum thickness at King Mountain was plotted to show that the regional thinning is not uniform. The thick section indicated at the Wilson Creek No. 20 well is believed to contain, in the lower

part, remnants of the Navajo sandstone. The unconformity mentioned above is probably within this interval. The formation is composed of sandstone that is very fine to fine grained, very friable and massively cross-bedded. The depositional environment is eolian.

The Curtis formation conformably overlies the Entrada and thins uniformly eastward from 110 feet at the Wilson Creek No. 20 well to 40 feet at the outcrop on King Mountain. It is predominately glauconitic sandstone and limestone with minor beds of grey-green and green shale. Oolites and shell fragments are characteristic of this formation. The limestone and sandstone beds are intergradational. The marine pelecypod *Camptonectes* (sp.) is common in this formation and was collected at King Mountain.

The basal sandstone of the Morrison formation is probably fluvial and thins from 160 feet in the Wilson Creek No. 20 well to 35 feet at King Mountain. The middle part of the formation is composed principally of varicolored greyish-green, green and red shale. Fresh-water limestones are consistently present in this middle portion of the formation. The upper part is principally composed of green siliceous shale, chert beds and siliceous sandstones. The contact with the overlying Dakota is unconformable.

Lower Cretaceous

The Dakota interval in the Wilson Creek No. 20 well consists of three distinct units: (1) a lower marine beach pebble conglomerate (Lakota) 30 feet in thickness, (2) a middle green shale and sandstone unit of the "Morrison type" (Fuson) 42 feet in thickness and (3) an upper marine beach sandstone unit, 70 feet in thickness, that probably includes both the Dakota and Muddy sandstones. In the area of outcrop, on King Mountain, only the Lakota conglomerate and the Dakota-Muddy sandstones are present.

Lower Cretaceous (?)

The Mowry formation is present throughout the area. The formation is composed of hard, black, siliceous shale interbedded with black, brittle, non-calcareous shale, sandstone and bentonite. Fish remains are characteristic of the formation. The formation is assigned a lower Cretaceous age by Cobban and Reeside (1951) and an upper Cretaceous age by T. C. Yen (1954).

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