INTRODUCTION

The Mesaverde formation and related rocks of Upper Cretaceous age comprise one of the major and most interesting sedimentary series in Wyoming. Problems in correlation, facies relationships, age determination and nomenclature have been the subject of controversy for many years. It has been only recently that sufficient subsurface information has become available to allow a reasonable detailed correlation in the state of Wyoming. Vast areas where the Mesaverde has been removed by erosion make correlation difficult on a statewide or regional basis. The correlations herein are not presented as being absolutely correct, but rather they are presented as a set of possible correlations based primarily on E-log interpretation.

The correlations are particularly controversial in three areas. (1) The first is the correlation of the Ericson formation and related rocks between West Desert Springs and Table Rock as shown in the first two wells on Cross Section A-A'. (2) The second is the correlation between the Wind River Basin and the Powder River Basin as shown in the last three wells on Cross Section B-B'. (3) The third is the correlation between the Laramie Basin and the northern Denver-Julesburg Basin. This is shown in the seventh and eighth wells on Cross Section A-A'. The relationship of the Mesaverde in the Denver-Julesburg Basin to that of the rest of Wyoming is presented with the least amount of conviction and is discussed very little in this paper.

Terminology applied to the Mesaverde formation and related rocks is badly in need of repair. An understanding of the Mesaverde has far surpassed the limitations of the terminology. The added control and information gained from recent drilling has made it necessary to bring the terminology up to date. This will probably be accomplished in the near future.

Cross Section A-A' shows the rock relationships between the Rock Springs Uplift and the northern Laramie Basin. Cross Section B-B' shows an interpretation of the rock relationships between the western Wind River Basin at Beaver Creek, and the southwestern Powder River Basin at Cole Creek. The first well on Cross Section B-B' is included to show a tie-in southward with the Rock Springs Uplift.

BLAIR FORMATION

The lowest member of the Mesaverde Group in the Rock Springs area is the Blair formation. This unit consists of a basal sand and approximately 1300 feet of gray silty shale with interbedded silty sandstones. The sandstones have a wide range of thickness but are generally thin-bedded and ripple-marked. The sands become increasingly abundant toward the top and grade into the overlying Rock Springs formation. The sands of the Blair become increasingly coarse toward the north where there is considerable carbonaceous material present in the Gulf Indian Gap well (Cross Section A-A'). The Blair also becomes more sandy and includes carbonaceous material in the Church Buttes field to the west and farther westward it probably grades into a typical Mesaverde lithology of sands, shales and coal beds. Eastward from the Rock Springs Uplift the Blair gives way to predominantly marine shale with occasional sandy zones. In the Wind River Basin, at Beaver Creek (Cross Section B-B'), the lowermost sands of the Mesaverde are believed to be correlative with the Blair and should probably be given the same name. These sands, with the exception of the Shannon zone, can also be seen to give way eastward into marine shale. This is the typical Upper Cretaceous regional relationship of sands, shales and coals to the west, to marine sands and shales, to predominantly shale in an eastward direction.

The age of the Blair formation is herein suggested to be primarily Eagle. It is an approximate time equivalent to the Eagle formation of Montana. The age dating suggested in the Rock Springs area for the Blair and subsequent formations is based on direct rock correlation from areas where dating has been established by fossil control.

ROCK SPRINGS FORMATION

Overlying the Blair formation is the Rock Springs formation. The formation was named by Schultz (1920) for exposures of coal bearing sediments near the town of Rock Springs, Wyoming. This coal bearing sequence changes facies rapidly southeastward into primarily marine shale. This change is seen in the outcrop on the east flank of the uplift (Hale, 1955). The coal bearing sediments of the northern part of the uplift grade into nearshore littoral sands on the east-central part of the uplift and subsequently into predominantly marine shale.