

**PETROLEUM SIGNIFICANCE OF SUB-COLORADO
(CENOMANIAN/ALBIAN) BOUNDARY IN
NORTHWESTERN NORTH AMERICA**

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This boundary, defined by Stelck (1958) as the sub-Colorado unconformity in Western Canada, represents the regional paleo-tectonic/erosional event which is the time and prime criterion for age discrimination between Cenomanian and Albian cycles of deposition and the faunal lineages — i.e. the Stages. The regional variations in the stratal succession across the sub-Cenomanian uncon-

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formity (ranging from the base of the Bear River Formation in Wyoming; at the base of the First Cat Creek or Dakota/Lakota contact in Wyoming and Montana; at the base of the Bow Island Series in southeast Alberta; at the Colony-Cessford/Mannville contact in east-central Alberta; at the base of the Pense-McCloud sequence in western Saskatchewan; at the Paddy/Cadotte contact in the Peace River region; at the base of the Upper Grand Rapids succession in northeastern Alberta; at the base of the Hasler-Cruiser-Goodrich-Dunvegan-Sikanni Sands in north-central British Columbia) represent basal Colorado sands resting on older Cretaceous Mannville, Mesozoic and Paleozoic strata which had been involved in pre-Cenomanian/post-Albian mild diastrophic differentiation throughout North America.

These relations represent a vast stratigraphic hiatus which is fundamental in age separation of Cretaceous beds above from those below the unconformity. Almost from inception (1958) this contact has been placed too high stratigraphically, thereby masking its significance, especially in exploration for and development of Cretaceous hydrocarbon reserves. Although the precise stratal position of this contact has been established by some workers locally, generally it is located higher, at the top of the basal transgressive Cenomanian shoreline facies. This procedure and resultant sedimentological/paleontological model with the hiatus excluded has in effect led to stratal separation of contemporaneous basal Colorado facies and misdating of these deposits and their faunas as Middle and Upper Albian. It appears quite clear that the apparent occurrences of *Neogastropilites* at 'several' different stratigraphic levels is simply a reflection of its occurrence above the sub-Cenomanian unconformity on different, older Albian intervals.

A review of the evolution of this stratigraphic problem is presented and alternate dissenting, critical views are brought forth to demonstrate the compatibility of faunal, sedimentological and paleo-structural erosional evidence for the proposed model. The model is used as a basis for mapping the Colorado and Mannville as separate sequences; this provides a new and more effective mapping criteria for more successful exploration and development drilling for Cretaceous hydrocarbon reserves.