

Stratigraphic Wars – Jurassic vs. Lower Cretaceous Legal Disputes

Doug Cant

Doug Cant Geological Consulting

Redwood Meadows AB

dcant @personainternet.com

In the last 12 years, at least three cases of disputed Jurassic vs. Cretaceous lease rights have reached or almost reached arbitration. The disputes centers on the stratigraphic affinity of one or more reservoir sandstones, whether they are Lower Cretaceous or Upper to Middle Jurassic. A number of different lines of evidence – palynological dating, petrography, facies analysis – have been used and related to “well-known” criteria for distinguishing the alternatives.

Most of these well-known criteria - “magic bullets” - have problems, however, as there are can be no standard criteria for making the distinction. The basal Lower Mannville (as recognized by regulatory bodies) lies on a long-period unconformity and is not the same unit in different areas (even some closely spaced areas). A number of officially Lower Mannville subunits (Cadomin, Cutbank, basal Ellerslie, part of Detrital) are not continuous with the overlying deposits and some are considerably older. Palynology has been indecisive in some case, perhaps because of the presence of these “intermediate” units. Other criteria – petrology, facies – are not diagnostic because of the facies and stratigraphic variations in the Mannville, but also in the Jurassic. Parts of the Upper Jurassic are purely non-marine while Middle Jurassic facies range from open marine through marginal marine incised valley fills. Distinguishing stratigraphic units within the Jurassic is not easily accomplished either as shown by the redesignation of Niton Field reservoirs as Upper Jurassic.

No criterion, by itself, is adequate to make an unequivocal decision. All of them must be put into a detailed stratigraphic context to be useful, a requirement that has not always been met.