MESOZOIC OIL RESERVOIRS OF WESTERN CANADA: A REVIEW OF THEIR POTENTIAL

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Historically, the Paleozoics have been seen to be the best hydrocarbon targets in western Canada and have so far constituted the bulk of the oil found here. However, in the last few years, a surprising increase in the proportion of post-Paleozoic oil reserves has taken place. As it now stands, in Alberta alone, in-place reserves for both the Mesozoic and Paleozoic are roughly equal. How did this come about?

As far as reservoir capabilities are concerned, the obvious difference is that Devonian plays have very good initial recovery factors (50%) and pays that are in the order of a hundred metres. This contrasts strongly with Mesozoic's 20-30% initial recovery factors and pays in the order of a few metres. Therefore, in order for the Mesozoic potential to have caught up the the Paleozoic in the last few years, the Mesozoic must have some other outstanding reservoir characteristic. That characteristic can be termed reservoir efficiency or capability.

It is well known that parameters such as pay, porosity and area are not regionally identical for any given play. It turns out that neither are any of the other reservoir characteristics. Mapping reservoir parameters show that all plays have systematically variable recovery factors, water saturation, initial gas/oil ratios, density and shrinkage etc. Hence the reserves of oil/unit volume (barrels/acre-ft. or m^3/h-m) for each play also varies systematically.

Unlike the Devonian, where reservoir capability is very closely related to facies and unlike the Mississippian which is primarily erosional edge controlled, Mesozoic reservoirs display distinctly different patterns in their reservoir parameters in general and their efficiency in particular. Examining these patterns indicates very clearly that numerous Mesozoic reservoirs have outstanding unrecognized oil potential.