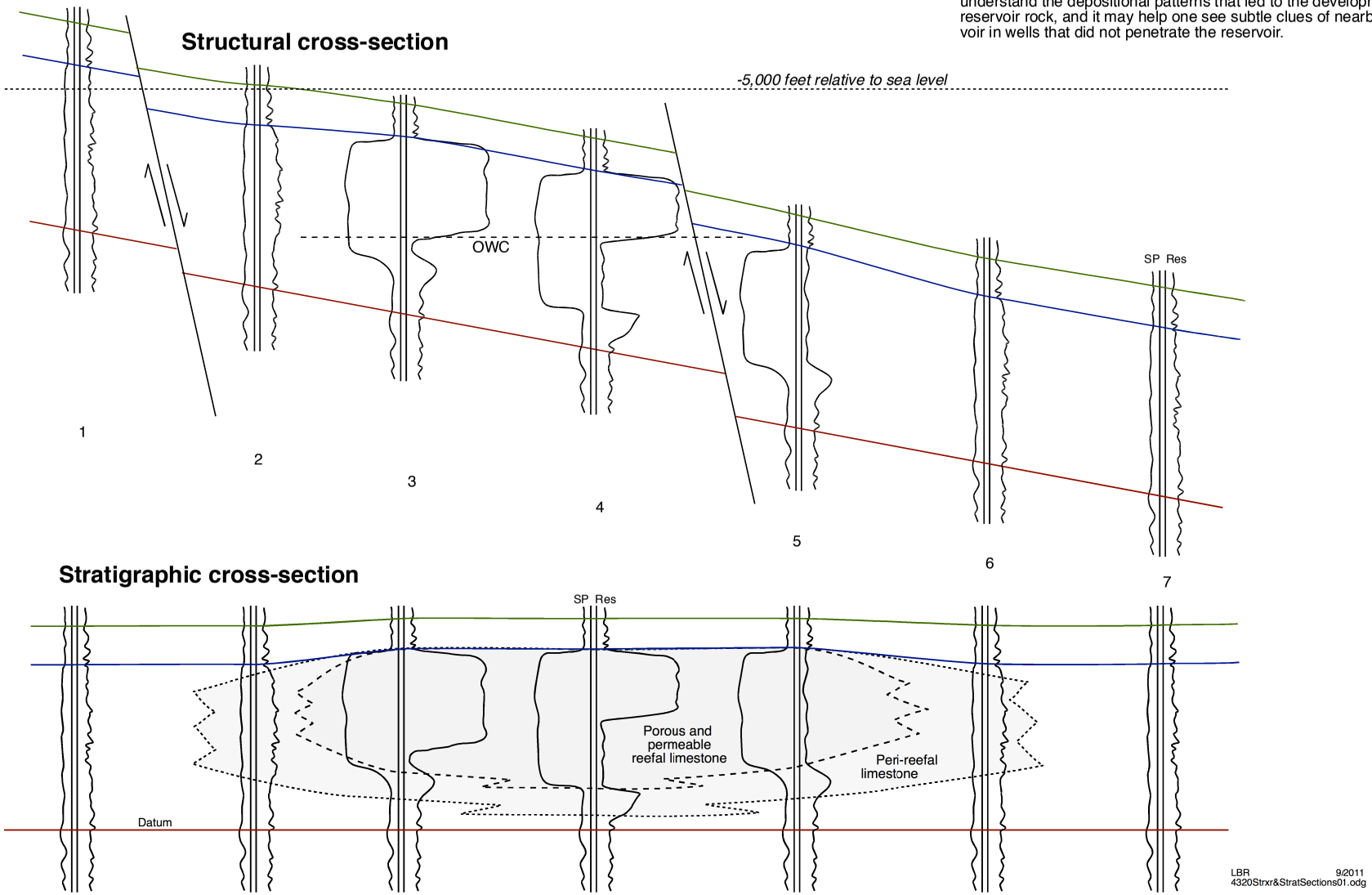
Structural and stratigraphic cross-sections

Structural and stratigraphic cross-sections differ in how they are "hung" - in what feature is by definition horizontal in the cross-section and thus is the "datum" of the cross-section. In structural cross-sections, a plane horizontal in real space is the datum, and so the cross-section is an attempt to show the configuration of well features in present real space. In stratigraphic cross-sections, a carefully chosen stratigraphic horizon is the datum. If that datum horizon was nearly horizontal at the time of deposition, the stratigraphic cross-section is an attempt to show the configuration of strata at the time of deposition.

The two kinds of cross sections each have their strengths and weaknesses. In the paired examples below, the structural cross-section shows why two of the three central wells are productive but the third is not, because of their positions in the structure. It further helps the viewer see why the resistivity logs of these three wells differ as they do. It thus helps one understand the present configuration of the petroleum accumulation.

On the other hand, the stratigraphic cross-section reveals stratigraphic details that one is likely to not see on the structural cross-section. For example, one can see the earlier reef development in Well 4 relative to that in Wells 3 and 5, the thinning of the overlying shale over the reef relative to its greater thickness in Wells 1, 2, 6, and 7, and the greater resistivity of peri-reefal rocks in Wells 2 and 6 than in Wells 1 and 7. The stratigraphic cross-section thus helps one understand the depositional patterns that led to the development of reservoir rock, and it may help one see subtle clues of nearby reservoir in wells that did not penetrate the reservoir.



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