

Reservoir Potential

The Paleocene and Cretaceous cored intervals of the Bass Basin wells have been described in the preceding Conventional Core section and the values for the porosity and permeability determined from whole core or plug samples have been listed.

Figure 8. is a plot of porosity versus depth for each core interval. Since the core intervals are relatively thin when plotted at this scale, each core generates a range of porosities which plot as a straight line on the depth scale. It should be noted that individual cores contain porosity ranges up to 17 percent points, thus an appreciable scatter of points is generated for each depth analysed. A best fit line is shown in an attempt to illustrate the deterioration of porosity with increasing depth. The slope of this line is so slight that it leads to the conclusion that porosity preservation is mostly not controlled by depth. Porosities in excess of 20 percent are found at 10,000 feet just as at 5,000 feet.

Figure 9. is a plot of porosity versus depth for the Paleocene upper L. balmei palynologic zone only. The name of the wells in which each core was cut is indicated. A best fit line indicates that porosity decreases with depth, from 5000 feet to 9000 feet, at a rate of one porosity percent point per 1700 feet, or so. This is considered non diagnostic of reservoir deterioration with depth. The range of porosities within one core interval is again up to 17 percent points.

Figure 10. is a plot of porosity versus depth for the Paleocene lower L. balmei palynologic zone. The name of the wells in which each core was cut is indicated. A best fit line indicates that porosity decreases with depth, from 7000 feet to 10,000 feet, at a rate of one porosity percent point per 2000 feet.. This is considered non diagnostic of reservoir deterioration with depth. The range of porosities within a core interval is up to almost 13 percent points.

Figure 11. is a plot of porosity for the T. longus palynologic zone of the Upper Cretaceous in the Bass #3 well conventional core. The average porosity of this core interval is 26 percent and the range is 4 porosity percent points. A porosity versus depth decline curve is not generated since this palynological zone has only been cored once in the Bass Basin wells. This core interval indicates excellent reservoir conditions in the Upper Cretaceous section of the Bass #3 well.

Figure 12. is a plot of porosity for the T. pannosus palynologic zone of the Upper and Lower Cretaceous section found in a core interval of the Durroon #1 well. The porosity range is almost 14 percent and the mean porosity is 19 percent.