

8. FLUID SEPARATION PROCESSES

The previous sections of this report address the creation and validation of my Macondo EOS, which was provided to other DOJ experts in their work to estimate the Macondo flow rates. This section turns to another subject: the significance of the process through which oil is produced. The process is very important because it directly affects the volume of stock tank oil recovered at surface conditions.¹³ Not surprisingly, oil companies have developed strategies to maximize stock tank oil production, as I discuss below.

Oil companies can use a number of different strategies to separate a stable stock tank oil from a reservoir fluid by removing dissolved gas. The simplest approach—though not one used frequently in industry practice—is a single-stage separation that takes the reservoir fluid from its conditions of reservoir temperature and pressure directly to stock tank conditions (usually defined as 60 F and 1 atm). Far more common in the industry, however, are multistage separation processes. In a multistage separation, the fluid

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yield the results shown in Table 3. The resulting volume of stock tank oil is directly

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¹⁴ Pennco Volatile Oil Reservoir Fluid, Report No. 16126-16-5010008508, June 30, 2010 (BP-ILZN-2179MDL-00063084); Pennco Volatile Oil Reservoir Fluid, Report No. 16126-15-5010008579, June 10, 2010 (BP-ILZN-2179MDL-01872218); Schlumberger Fluid Analysis on Macondo Samples, June 9, 2010 (BP-ILZN-MDL-2179006-2844-62809); Intertek Multistage Separator Test Final Report WTC-10-001812, June 10, 2010 (BP-ILZN-MDL-21760440076-008). Because BP requested that each PVT lab perform a multistage separator test at these conditions for each sample, it seems likely that BP had projected their production separators for the Macondo well to operate at those conditions.