



## Adapting Traditional Reservoir Volumetric Methods to the Workstation

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### ABSTRACT

Traditionally, reservoir volumetrics for both bottom-water and edge-water conventional reservoirs have been determined based on net pay isochore maps hand contoured by geoscientists. The advent of geoscience interpretation software on computer workstations allows this work to be done more quickly but it is important to understand the process to ensure accurate results.

Isochore maps of bottom-water reservoirs, reservoirs that are everywhere underlain by water, are traditionally made by tracing the hydrocarbon-water contact from a top-of-reservoir structure map as a zero contour. True vertical thickness (TVT) net pay values from every well within the reservoir are then contoured. When the structure is interpreted on a workstation the same procedure can be used. If, however, the net reservoir is relatively uniformly distributed over the gross interval, a faster method may be used. The bulk rock volume (BRV) can be easily calculated on the workstation as the volume between the top of the reservoir and hydrocarbon-water contact. If the net to gross ratio (NTG) is a constant, the BRV multiplied by the NTG gives the net pay volume, which can then be contoured. If the NTG is varied, it can be mapped and the BRV can be multiplied by the NTG map.

Isochore maps of edge-water reservoirs, reservoirs that are full-to-base over part of the reservoir, are traditionally constructed using the Wharton method. These results can be matched on the computer by determining the BRV of the reservoir between the top-of-the-reservoir structure and the base-of-the-reservoir structure that has been clipped at the hydrocarbon-water contact and multiplying the BRV by the NTG. If the net reservoir rock is not uniformly distributed in the gross interval, additional efforts are required to get accurate net pay maps.