Temporal and Spatial Evolution of Reservoirs, Northern Deepwater Gulf of Mexico

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ABSTRACT

An analysis of the reservoir ages of the 226 known fields and discoveries in the northern deepwater Gulf of Mexico indicates that the location of deep-marine reservoirs through time is a fairly good proxy for the coeval shifting shallow-marine depocenters. In addition, 4 Norphlet discoveries (lower Oxfordian) with eolian reservoirs are present in the northeastern Gulf of Mexico.

Thirty fields-discoveries are upper Paleocene to lower Eocene (deepwater Wilcox) reservoirs in the northern and northwestern area (including 5 from Mexico). Fields represent sediment input from the north and northwest part of area. Three fields-discoveries are present in the Oligocene deep-marine Frio, including one in Mexico waters (Supremus).

The significant eastward shift in the shallow-marine depocenter at the beginning of the Miocene is clearly seen in the distribution of the deepwater reservoirs. Fourteen lower Miocene fields are primarily in southwestern Green Canyon. For the middle Miocene, the slight eastward shift in the shallow-marine depocenter is indicated by the 51 fields that are primarily in Mississippi Canyon, eastern Viosca Knoll, and southwestern Green Canyon. Fifty-seven upper Miocene fields have a similar distribution as middle Miocene fields, with a few fields in central Green Canyon and eastern Garden Banks.

A westward shift during the early Pliocene depocenter is seen in the distribution of deepwater fields; 42 fields are primarily in northeast Mississippi Canyon, Green Canyon, and central Garden Banks. A continued westward shift in depocenter during the late Pliocene resulted in 38 fields in East Breaks, Garden Banks, and Green Canyon, and 33 fields in lower Pleistocene reservoirs. In contrast, 5 fields with upper Pleistocene res-

ervoirs are found across the area, indicating the abrupt shifting of the shallow-marine depocenter.