Exploration Activities and an Overview of Petroleum Geology of Sudan

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ABSTRACT

This presentation is aimed at shedding some light on the emerging oil industry in Sudan. Sudan is the largest country in Africa with an area of 2.5 Km^2. It borders nine African countries and the Red Sea to the East. Hence, it is considered an important gateway to Africa.

Oil Exploration in Sudan dates back to late fifties when Agip was granted the First Exploration Permit in the Red Sea. However, the most important exploration event was when Chevron Overseas Petroleum Inc. was granted a large Exploration Permit in the interior basins. Chevron made the first oil discovery in the Sudan interior basins in 1979. To date, significant amounts of reserves have been discovered and the country currently produces about 260,000 BOPD. Several new fields are under development and are expected to come on stream in the near future. A 1600-Km long pipeline connects the interior oil fields to an Export Terminal at the Red Sea. These encouraging results and establishment of infrastructure and services have recently attracted many companies to this largely unexplored country.

Sedimentary basins of Sudan owe their existence to the rifting activities of the western, central and east African rift systems. These basins vary in age from Palaeozoic to Tertiary.

The Mesozoic and Tertiary basins in central, southeast and southwest Sudan have been the focus of exploration activities in the past three decades. Geophysical and drilling data indicate very deep basins; the deepest known trough in the “Muglad” basin is estimated to contain as much as 15-20 Km of non-marine sediments. Favourable petroleum systems have been proven in most of these basins and examples of these systems will be presented.

The Tertiary basins of the Red Sea are filled with thick marine and non-marine sediments of Late Cretaceous to Recent ages. Drilling has proven

a post-salt petroleum system, and gas and condensate reserves have been found.

The Palaeozoic basins in the northwest have not been explored. Limited surface geology, regional magnetic and gravity data indicate presence of deep basins with as much as 5-6 Km of continental and marine sediments.