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## INTERNATIONAL EXPLORATIONISTS

### HGS INTERNATIONAL EXPLORATIONISTS DINNER MEETING—FEBRUARY 13, 1991

JOHANN-CHRISTIAN PRATSCH—  
Biographical Sketch



Chris is a geological consultant for worldwide exploration and basin analysis who has been in Houston since 1989. He started his geological career in 1954 with Mobil Oil after receiving his Ph.D. at the University of Goettingen/Germany with a thesis on the geology of southern Portugal. Until 1983 he held a number of positions as petroleum geologist with Mobil Oil in the USA, Libya, Vene-

zuela, Colombia, France and Germany, including that of Manager of Regional Geology-Worldwide in Dallas. From 1983 to 1988 he was a Sr. Exploration Advisor-International New Plays with SOHIO, then Sr. Management Advisor with Mark Producing, Inc., working on new plays and Federal Sale preparations in the Gulf Coast offshore. His professional interests lie in the definition of new exploration plays in mature and in new basins worldwide, including such areas of modern interest as Russia, East Europe, South America, North Sea, and sub-salt plays in the Gulf Coast province. He was Chairman of the HGS International Explorationists Committee in 1984-85.

#### VERTICAL OIL AND GAS MIGRATION: A MAJOR EXPLORATION PARAMETER

Oil and gas migration is one of the most important though often neglected parameters in basin evaluation, play and prospect definition worldwide. Yet, all fields known are the result of hydrocarbon migration. The neglect stems mainly from an incomplete understanding of geological and physico-chemical processes involved. Modern solutions to such problems come from the field of comparative basin

analysis, using an integration of geological, geophysical and geochemical data.

Vertical oil/gas migration uses faults, fractures and pore systems, while the driving forces for migration are thermal and hydraulic. Basin-wide structural analysis is required. It will lead to the prediction of open fracture systems. The directions of both lateral and vertical migration paths are controlled by basin structure.

Where vertical oil/gas migration has been a major factor in field development not only should similar accumulations be searched for elsewhere in this basin; but also, plays for oil and gas not yet migrated vertically will become the new targets. Examples are the offshore Gulf of Mexico, the North Sea (partly), parts of the Middle East, the Vienna Basin, and Hungary (partly).

Where vertical oil/gas migration has been nil or incomplete, major new reserves will be found close to potential or thermally mature source beds, like in the Paris Basin, Hungary (partly), the North Caspian/Russia, many Sub-andean basins from Venezuela to Chile/Argentina, the North Sea (partly), SE Australia, the Red Sea/Gulf of Suez, the Middle East (partly), Sumatra, etc.

Once vertical oil/gas migration is understood in a basin, many new plays and prospects can be realized. Hydrocarbon migration analysis, indeed, is a powerful factor in basin evaluation and new play definition.