

# MEETINGS

## HGS LUNCHEON MEETING— MARCH 27, 1991

PHILIP H. STARK—Biographical Sketch



Dr. Phillip H. Stark received his B.S. in geology from Oklahoma University in 1958. He received his M.S. and his Ph.D. in geology from the University of Wisconsin, in 1961 and 1962, respectively.

Dr. Stark was an exploration geologist for Mobil Oil Co. from 1962 to 1965, Wichita, KS. In 1965 he was promoted to Regional Data Processing Coordinator of Mobil Oil's Denver office. From 1969

to the present Dr. Stark has been Vice President of Technical Marketing for Petroleum Information, Denver, CO.

Dr. Stark is active in several societies and is the author of several papers and publications on computer applications in geology.

## HORIZONTAL DRILLING - OVERVIEW OF GEOLOGIC ASPECTS AND OPPORTUNITIES

Horizontal drilling and completions may become the most significant petroleum technology enhancement since reflection seismic. Through December, 1990, 853 horizontal completions were recorded in the U.S., resulting in 726 oil and 66 gas producers. In addition, 376 horizontal wells were drilling or completing and 358 permits were outstanding. More than 80 percent of historic horizontal wells in the U.S. were completed during 1990. Case studies demonstrate higher production rates and improved recoveries for horizontal completions.

The Austin Chalk trend in Texas continues to dominate domestic horizontal drilling. Case histories of the Pearsall and Giddings fields document results of horizontal versus vertical completions and illustrate the potential for several parts of the trend.

Industry is expanding the application of horizontal drilling to other geologic opportunities. Eight geologic categories with potential for horizontal technology are reviewed. Models and examples showing results are presented for each: source rocks - Bakken shale case history, North Dakota; fractured reservoirs - Austin Chalk, Texas; paleokarst reservoirs - model for Arbuckle (Ellenburger) carbonates; chalk reservoirs - Austin chalk and Niobrara examples; stratigraphic traps - depositional models and examples from tight, overpressured gas sands; reservoir heterogeneity - Spraberry trend example, Midland basin; coalbed methane - US potential; coning - Prudhoe Bay example, Alaska.

Current expansion of horizontal drilling to these categories of geologic opportunities in Texas and the Gulf Coast region are identified.

Forecasts predicting 5000 annual worldwide horizontal completions by the year 2000 are tempered by limited equipment, crews and recognized opportunity. If, however, economic benefits from case histories are creatively applied to potential geologic opportunities, then horizontal technology may comprise 30 percent or more of worldwide drilling at the turn of the century. Certainly, a technology that reduces dry hole and environmental risks, increases productivity and generates profits with \$20 oil could revitalize the domestic onshore petroleum industry.