

# INTERNATIONAL EXPLORATIONISTS

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## Geologic Setting for Additional Paleozoic Petroleum Potential in the Middle East

Louis Christian

HGS Dinner Meeting – January 17, 1994

Social Period, 5:30 p.m., Dinner and Meeting, 6:30 p.m.

Post Oak Doubletree Inn

The greater Middle East Sedimentary Basin holds about 60% of world-wide oil reserves, and in recent years has produced up to nearly 40% of world-wide annual oil production, depending on changing political and economic conditions in the Middle East and elsewhere.

For approximately half a century most oil has been produced from Upper Jurassic Carbonates and Middle to Lower Cretaceous Carbonates in Saudi Arabia, Iran, and the Emirates, from Lower Cretaceous deltaic sandstones in Iraq, Kuwait, and northern Saudi Arabia, and from Lower Miocene to Eocene carbonate reservoirs in Iran and Iraq.

Beginning in 1989 and 1990 this picture began to change significantly. Major to giant-sized Paleozoic discoveries of oil, plus gas and condensate, were reported on shelf areas west and southwest of the main Jurassic producing fields of Saudi

Arabia. As far north as Jordan and Turkey, other discoveries of unknown commerciality, have been reported from Permian, Carboniferous and Devonian sandstone reservoirs.

Some of these are destined to become major or giant sized producing fields. For example, Saudi Aramco's Hawtah discovery, southwest of Riyadh, is scheduled to start producing in 1994 at a rate of 150,000 BOPD from Permo-Carboniferous sandstones.

Several geologic traits favor further Paleozoic oil discoveries along the western shelf-slope of the Middle East Basin. Pre-Hercynian subcrop geology, with known major north-trending fault blocks, the presence of oil-prone, mature Silurian source rocks in adjacent sub-basins, known Triassic and younger isochron thinning and compaction over old structural highs and old topographic

highs, and structural interference patterns between regional Paleozoic north-south axes and late Cretaceous-Tertiary northwest trending structures combine to create a strong geologic rationale for expanding current Paleozoic exploration northward beyond the borders of Saudi Arabia into parts of Iraq, Iran, Jordan, Syria, and Turkey, and to the south, in certain structurally higher parts of the Emirates.

Selective areas are prospective for Paleozoic oil, but thermally overmature areas will, of course, be largely prospective for gas. Preliminary maturation fairways have been mapped regionally, to highlight the oil potential areas.

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### LOUIS CHRISTIAN -

#### Biographic Sketch



Louis Christian began his exploration in California with Chevron. Subsequently, he has held assignments in the Philippines, Libya, Tunisia, and Indonesia for Mobil Oil. His interest in Middle East petroleum exploration dates to 1982, having worked on Iraq, Abu Dhabi, Kuwait, Yemen, etc. This presentation summarizes Mr. Christian's current work as an independent consultant, integrating his many years of experience in the area.