

INTERNATIONAL EXPLORATIONISTS GROUP EVENING MEETING—NOVEMBER 14, 1984

THOMAS E. O'CONNOR—Biographical Sketch



Thomas E. O'Connor is Vice President of Aminoil International, Incorporated, developing international exploration opportunities. Tom oversees three production areas (Indonesia, North Sea and Argentina) and directs the exploration activity in nine exploration contract areas. He received a B.S. degree in geology from Stanford University in 1958 and an M.S. degree in geology from the University of Colorado in 1961. Since

1983, he has been Adjunct Research Professor in the Earth Sciences and Resources Institute at the University of South Carolina.

From 1963 to 1980, Mr. O'Connor worked for Standard Oil of Indiana (AMOCO) in basin studies, play development and prospect generation, initially in the United States (Northern Utah, Alaska, northern Basin and Range Province in minerals prospecting, and Southern California) and later internationally (Netherlands, Dutch North Sea, then the European Region Exclusive of the North Sea). From 1974-1979, Tom was Chief Geologist in Amoco's joint operating company, Gulf of Suez Petroleum (GUPCO), supervising a 60 man staff evaluating all areas of Egypt but concentrating on the Gulf of Suez and Western Desert areas. From 1979-1980, in Houston, he was Regional Geologist responsible for the technical overview and quality control of Amoco's Africa-Middle East Region exploration staff of approximately 100 persons, which included preparing for the recruiting, training and professional development of the geological staff. In 1980, Tom began working for Aminoil International, Incorporated, first as Manager of International Exploration and New Ventures, developing a worldwide corporate exploration plan to expand activities outside existing operating areas and since 1981 as Vice President overseeing production and directing exploration activity.

In addition to the Houston Geological Society, Mr. O'Connor is a member of the American Association of Petroleum Exploration Society of Great Britain and the Egyptian Geological Society.

THE PETROLIFEROUS CUYO BASIN AS COMPARED TO ARGENTINA'S OTHER SEDIMENTARY BASINS - A GEOLOGIC OVERVIEW

Argentina covers nearly one sixth of the South American continent and consists of two major massifs surrounded by a series of intracratonic and marginal cratonic basins. The western margin basins have been markedly deformed by the formation of the Andes mountain chain during the Late Mesozoic/Early Tertiary.

The two massifs are Precambrian in age. The first consists of the southern extension of the Brazilian Shield and underlies much of northeastern Argentina. The second, the southern, Patagonian/Deseado Massif, is more enigmatic and

appears to have been sutured onto the Brazilian Shield near the end of the Paleozoic. There is considerable controversy concerning its origin and original location, as well as the nature of the suturing of the two massifs.

Associated with the Brazilian Shield are two marine Paleozoic basins in the northern portion of the country. The Tarija Basin is largely represented in Bolivia where it is the center of considerable exploration for and production of natural gas. Farther east is the large, intracratonic Chaco-Parana Basin which extends southwesterly from Paraguay and Brazil. To date it has proved to be barren of hydrocarbons.

Along the western and southern margins of the enlarged Mesozoic continental mass of Argentina is a series of marine basins which were present prior to the collision and onset of subduction of the Pacific plate during the Late Mesozoic/Early Tertiary. These western, leading edge basins were originally simple in format and structural style until the overprint of the Andean Orogeny and associated eastward-verging overthrusts deformed their western margins. To varying degrees, all of the marginal cratonic basins have proved to be hydrocarbon-bearing, including recent discoveries in the Magallanes/Malvinas area. At regular intervals along the eastern, trailing edge of the Argentine portion of the continental plate is a series of continental intracratonic Mesozoic basins which are aligned at right angles to the present-day coastline. There is inconclusive evidence that these basins deepen and become more marine toward the margin of the continental shelf. With the exception of the San Jorge Basin, these eastern basins have so far been barren of hydrocarbons.

In contrast to the foregoing, the Cuyo Basin in the Mendoza Province of northwestern Argentina is Triassic to Cretaceous in age, is taphrogenic in origin, is interior to the then continental margin, and is entirely continental in its sedimentary fill. It also contains the La Ventana/Vaca Muerta Field complex which produces primarily from Triassic conglomerates and is the largest single oil field complex in Argentina. The basin had its origin as a rift graben complex floored almost everywhere with volcanoclastics. Pennecontemporaneous with the subsidence of the graben was the deposition of thick, black, lacustrine shales which coarsen upward to red conglomerates as rift-related extension ceased and thermal subsidence set in. This event was marked by extensive volcanic flows which locally served as the seal for the lacustrine generated oil that had migrated into the reservoir section underlying the flows. A northward, basinward-plunging nose has served to localize petroleum accumulations, with southern closure being provided by minor structural reversals or by the updip shaling out of the conglomerate reservoir. The interior location of the basin preserved it from most of the subsequent Andean-related deformation.