INTERNATIONAL EXPLORATIONISTS GROUP EVENING MEETING—FEBRUARY 20, 1985

KIM ROBERT BUTLER—Biographical Sketch

Kim Robert Butler is an exploration geologist with Tenneco Oil Exploration and Production in Houston. He has been working since 1983 in the International Division, South American area of operations. Kim received both his B.S. and M.S. in geology from Wichita State University, Wichita, Kansas in 1977 and 1980 respectively. His thesis was a structural analysis of the Cambrian-Ordovician strata, on the northeast flank of the Wichita Mountains in Oklahoma. Kim continued graduate work at the University of South Carolina in Columbia, South Carolina and worked as a research assistant in the Earth Sciences and Resources Institute there studying Colombia, South America. In 1983 he received a Ph.D from the University of South Carolina. His dissertation was "Andean-Type Tectonics: Structural Development of the Upper Magdalena Valley, Columbia". At Tenneco Oil, Kim has constructed regionally balanced cross-sections of the Upper Magdalena Valley as well as developing play concepts in the heavy oil belt along the west flank of the middle Magdalena Valley.

Dr. Butler is a member of the American Association of Petroleum Geologists and the Geological Society of America.

EXPLORATION IN OVERTHRUST BELTS: AN EXAMPLE FROM THE UPPER MAGDALENA VALLEY, COLOMBIA, S.A.

Hydrocarbon production from the Canadian and other A-type overthrust belts has been the impetus for far reaching exploration in similar orogenic belts. The Andean overthrust belts have been one such region.

The Upper Magdalena Valley is a Neogene age foredeep basin situated between the Central and Eastern Cordillera of Colombia. Up to 2500 meters (8000 ft.) of non-marine molasse sediments overlie a series of east-directed thrust faults. These faults disrupt a pre-Miocene eastward thinning clastic sedimentary basin. This older basin contains two distinct sedimentary cycles. The first cycle on top of basement is a Late Cretaceous marine transgressive-regressive sequence. The second cycle is a Paleogene non-marine molasse sequence.

The thrustbelt that developed across part of the pre-Miocene sedimentary wedge is typified by a sequence of east-verging, ie. cratonward migrating, basement-rooted thrusts. Part of the crustal shortening is transferred into the sedimentary cover to create an adjacent, but aerially limited decollement thrustbelt. Younger decollement thrusts fringe structurally lower basement faults that lie to the east. Other than the extensive basement involved nature of these structures, this overthrust belt illustrates typical thrustbelt features, ie. ramp anticlines, small duplex zones, and folded thrust sequences.

An outline of the structural style and development of the Upper Magdalena Valley illustrates common thrustbelt structures within a unique section of Andean geology. For purposes of demonstrating the integrated approach that is used in exploration in these structurally complex areas, examples from surface geology, seismic, gravity, and geochemical surveys will be shown across mature oil fields and exploration plays.