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PETER A. EMMET—Biographical Sketch

Pete Emmet is employed as a Structural Geologist - Geophysicist in the Integrated Group, Aero Service Division of Western Geophysical Company of America in Houston, Texas. His responsibilities include the interpretation of gravity and magnetic data, image interpretation including Landsat, airborne and satellite-borne radar and aerial photographs, and the intergration of these data sets with seismic, well log and surface geological data. Although he is involved in interpretation projects worldwide, his areas of expertise are Alaska and Latin America.

Mr. Emmet received his B. S. degree in Geology in 1978 from the University of California at Davis, and then attended the University of Texas at Austin where he worked on a mapping thesis in Honduras under the supervision of Dr. W. R. Muehlberger, receiving his M. A. in Geology in 1983. Mr. Emmet's thesis, **Geology of the Agalteca quadrangle, Honduras, Central America,** is the source for much of the material in this presentation.

While a student, Mr. Emmet was employed in numerous part-time and summer jobs as a geologist. He has spent field seasons in Alaska with the U.S.G.S. Oil and Gas Branch, Atlantic Richfield and Noranda Exploration, and in addition, has worked in geothermal, mineral and oil and gas exploration for Cascadia Exploration, Callahan Mining Company and Amoco Production Company, respectively. Upon graduation from the University of Texas, Mr. Emmet worked briefly for Geological Consulting Services in Houston on a regional log correlation project, and has been with Aero Service since March 1984.

OVERVIEW OF THE TECTONICS OF HONDURAS

Northern Central America is of exploration interest both for its hydrocarbon potential, and for the critical information which it can provide to evaluate the hydrocarbon potential of other parts of the tectonically complex western Caribbean. The Mesozoic strata overlying the Chortis Block of northern Central America, especially the thick and widespread Lower Cretaceous carbonates, are similar to highly productive strata in southeastern Mexico. Recent palinspastic reconstructions suggest that the Chortis Block may have been plucked from southern Mexico and transported to its present location through a series of complex plate interactions, and the possibility that the prolific Mexican hydrocarbon province extends into Honduras and northern Nicaragua has not been adequately tested onshore.

The structure of western Honduras is dominated by WNW- to NW- trending dextral wrench faults as inferred from the orientation of en echelon folds and thrusts and from the geometries of associated north-trending pull-apart basins. The faults form major shear zones spaced from 30 to 50 km apart in western and central Honduras. Detailed mapping at a scale of 1:50,000 has been concentrated along one of these shear zones, the Montana de Comayagua structural belt, discussed in detail below. East-central Honduras is characterized by a transition from dominantly NW- to NE-trending faults. The major NE-trending faults are probable sinistral wrench faults, and are spaced approximately 50 80 km apart. The zone of complex interaction between the NW- and NE-trending faults is beyond the area of reliable geologic coverage, and should be the focus of future mapping studies.

The Montana de Comayagua structural belt is a N60W-trending wrench zone which has a documented length of 130 km and a width of 30 km in central Honduras. The Montana de Comayagua structural belt may extend into unmapped areas to the northwest toward Guatemala and to the southeast toward Nicaragua. Mapping of the Agalteca quadrangle has clarified that the Montana de Comayagua structural belt consists of a series of left-stepping, strike-slip faults produced by probable dextral Cretaceous to early Tertiary. Associated with these strike-slip faults are syntectonic high-angle reverse faults, thrust faults, folds and antithetic shears. The assemblage is a "flower structure" in cross section, and is believed to be the product of transpression. The Late Cretaceous-early Tertiary wrench structures of central Honduras are overprinted and locally reactivated by north-trending grabens of the Honduras Depression which began to form in the mid-Miocene and are still active.

The axis of the N60W-trending wrench zone in the Agalteca quadrangle is structurally high and exposes an apparently conformable sequence of deformed Mesozoic sedimentary rocks. A Paleozoic (?) metamorphic basement, the Cacaguapa Schist, is known to unconformably underlie the Mesozoic sequence in central Honduras, but is not exposed in the Agalteca quadrangle. The Mesozoic sedimentary rocks include Upper Jurassic (?) to Lower Cretaceous conglomerates of the Honduras Group which are overlain by Valanginian (?) to Albian limestones of the Yojoa Group. The Yojoa Group is overlain by Albian to Late Cretaceous redbeds of the Valle de Angeles Group, which include an intercalated limestone member, the Cenomanian Esquias Formation. The Mesozoic sedimentary rocks are intruded by mafic to felsic stocks and dikes of Late Cretaceous to Tertiary age, and are unconformably overlain by Tertiary volcanic rocks.

The geologic database for northern Central America is limited, and varies greatly in detail and reliability across international boundaries, hampering regional tectonic and stratigraphic analysis. Honduras has the poorest published geologic coverage of the Central American republics. An in-progress compilation from original sources of the geology of western and central Honduras provides the basis for a series of preliminary geologic quadrangle sheets at a scale of 1:250,000. The compilation is based on all available non-proprietary geologic maps at a scale of 1:250,000 or larger. It comprises a much needed partial update to the published geologic map of Honduras, and is merged with the published maps of adjacent Guatemala, El Salvador and Nicaragua.