

ASSESSMENT OF PALEOMAGNETIC RESULTS FOR MIOCENE AND YOUNGER VOLCANIC AND SEDIMENTARY ROCKS IN THE TRANSVERSE RANGES AND VENTURA BASIN, COASTAL SOUTHERN CALIFORNIA

Joseph C. Liddicoat

Department of Environmental Science, Barnard College, Columbia University, New York, NY 10027,

jliddico@barnard.edu

Beginning with the pioneering study by Blackie and Yeats (1976) of cored Pliocene and Pleistocene marine sediment (Pico Formation, renamed the Fernando Formation) in the Saticoy Oil Field, subsequent work by investigators at UC, Santa Barbara, in the 1970s and 1980s (Luyendyk, 1991; references therein) and others (Prothero, 2001) has resulted in a wealth of paleomagnetic data for volcanic, terrestrial, and marine rocks in the Transverse Ranges and Ventura Basin. Those data record nearly 90 degrees of clockwise rotation in the ranges and basin since the Miocene (Hornafius, 1985; Luyendyk, 1991) and a magnetostratigraphy that has been used for geochronologic investigations in a region where exploration and recovery of hydrocarbons of economic importance continues. Besides the paleomagnetic data that have been accepted, other paleomagnetic data are anomalous such as those for the Miocene Monterey Formation exposed at South Mountain near Santa Paula, CA, that record southeasterly declination and negative inclination that is shallow by nearly 35 degrees when compared to the inclination of an axial dipole field; both are contrary to the large clockwise rotation described above where the mean inclination is shallow by only about 15 degrees (Liddicoat, 2001). I will review the collective paleomagnetic data for Miocene and younger sediments that have been studied in the Ventura Basin to assess their utility in geologic, paleontologic, and paleoclimatic investigations in coastal Southern California.