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TO BE OR NOT TO BE A CALDERA -- LA REFORMA CALDERA, BAJA CALIFORNIA SUR, MEXICO

The Quaternary La Reforma caldera lies along the Gulf of California coast in central Baja California. The nature of this volcanic center has been debated for some time. Schmidt (1975) and Walker, et al. (1992) argued that it is not a caldera at all. Demant (1981, 1984), however, considered it a caldera. The center has a typical caldera morphology with a well exposed topographic moat lying between a central highland and an outer ring escarpment 10 km in diameter. The central area, considered a resurgent dome by Demant, stands 700 m above the surrounding ring escarpment. Pyroclastic and lava outflow sheets surrounding the caldera have been dated at approximately 1.09 Ma (Schmidt, 1975). The moat is filled with a discontinuous ring of silicic domes and associated fragmental eruptive units.

The immense resurgent dome is dominated by a homocline of volcanic flow units. All published reports have classified these strata as the regionally widespread, nonmarine Miocene Comondu Formation. Additionally, Mesozoic granitic rocks have been reported within the resurgent dome. Recent field work in the area suggests that these strata are dominated by welded ash-flow tuffs and lavas, not at all like the tuff breccias and debris flow deposits characteristic of the Comondu Formation in central Baja California. We believe that the central La Reforma pyroclastic strata formed from voluminous intracaldera pyroclastic flows erupted during the main caldera-forming eruptions. The recognition of these characteristic units verifies the interpretation of La Reforma as a true resurgent caldera. Extreme post-collapse uplift of the resurgent dome has exposed granitic basement and overlying Pliocene(?) marine sedimentary rocks as well as a thick section of caldera-filling pyroclastic flow deposits.