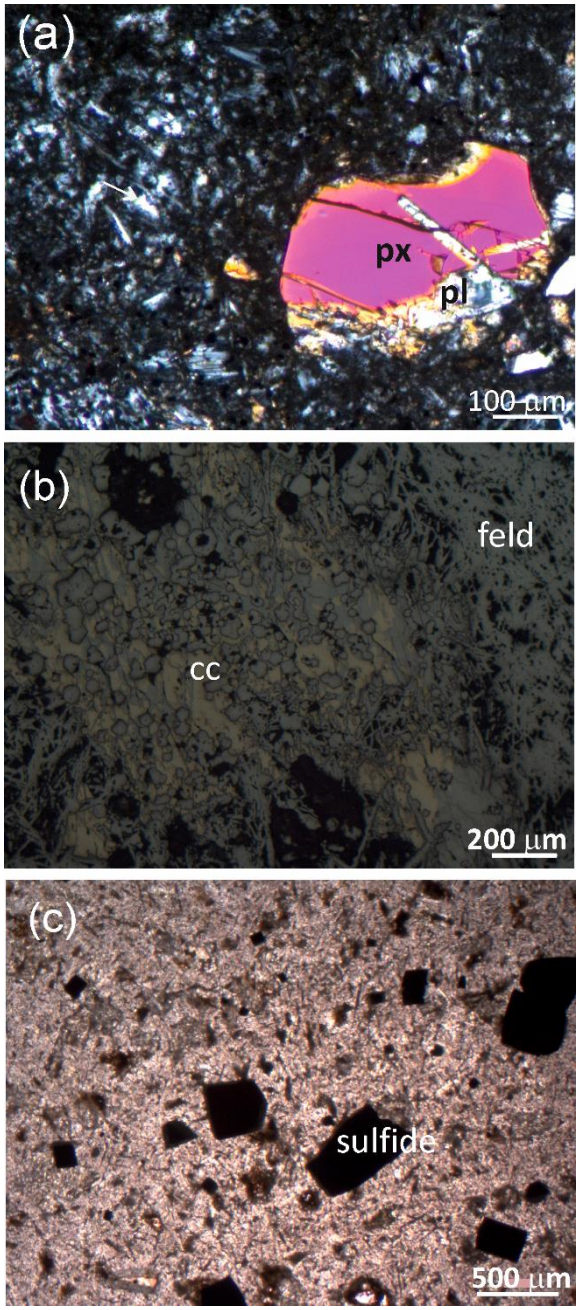

Figure S1. The cored reservoir rocks cored at San Vito 1 (**a,b**) and Mofete 1 (**c**) wells under the optical microscope. (**a**) The chaotic tuffs (representing the modeled Campanian Ignimbrite formation) cored at depths of 1412 m from the phyllic facies. The image displays, under the cross-polarized light, the same area in Figure 3g. It shows a lava clast that occurs within the 1412 m chaotic tuff and that exhibits a pyroxene phenocrysts set in a matrix strongly microcrystallized by plagioclase. (**b**) The chaotic tuff (representing the modeled Campanian Ignimbrite formation) cored at 1713 m of depth from the propilitic - calcium-aluminium silicate facies in the San Vito 1 borehole. The image shows the low vacuolar and locally crystalline matrix under the plane-polarized; it presents the appearance of the widespread calcite set in the inter-grains. (**c**) The lavas cored at depths of 1500 m from the phyllic facies in the Mofete 1 borehole. The plane-polarized image shows the highly crystalline matrix with several percent of sulfides and voids-filling calcite represented in Figure 4b; the plagioclase microcrysts are altered. Arrows indicate feldspar-rich portions. Abbreviations: px, pyroxene; pl, plagioclase; feld, feldspar; cc, calcite. Refer to Figure 2a for downhole location and aspect of cores. Additional details are in the text. .