

TABLE A. PETROGRAPHIC DESCRIPTIONS AND ADDITIONAL CHEMICAL DATA OF

sample #	lithology	$^{87}\text{Sr}/^{86}\text{Sr}$	carbonate occurrences	carbonate analyzed	diagenetic carbonate mineralogy	mol % MgO
2275-4	layered sandstone and siltstone	0.712207	pore-filling cement	pore cement (bulk rock powder)	calcite	
2275-5	conglomerate	0.708933	pore-filling cements, small veins, and clast rims; 1 large carbonate-cemented sandstone clast	pore cement (microdrill)	mostly Mg-calcite, 1 dolomite	13.9-50.3
2275-6	sandstone	0.709853	pore-filling cement	pore cement (bulk rock powder)	calcite	1.3-2.3
2276-3	layered sandstone	0.710442	pore-filling cement	pore cement (bulk rock powder)	calcite	

2276-4	sandstone	0.710673	pore-filling cement	pore cement (bulk rock powder)	calcite	1.7- 2.3
2278-3	sandstone with veins	0.709748	pore-filling cement, sandy veins	pore cement (microdrill)	Mg-calcite	7.6- 10.8
2280-3	sandstone	0.712794	pore-filling cement, minor detrital grains	pore cement and grains (bulk rock powder)	calcite, dolomite	
2281-1c	fossiliferous sandy concretion	0.711351	patchy pore- filling cement, large shell fragments	pore cement (microdrill)	calcite	
2281-4	sandstone with mudstone rip-up clasts	0.711803	pore-filling cement, grain coatings	pore cement, grain coatings (bulk rock powder)	mostly Mg- calcite, 1 dolomite	7.4- 46.4

CARBONATE-BEARING ROCKS FROM THE VERTICAL FAULT ZONE

method	percent diagenetic carbonate	major detrital mineralogy	general description
XRD	33	quartz, plagioclase, amphibole, mica; minor chert and volcanic rock fragments	siltstone layers: discontinuous, up to 5 mm thick, show internal alignment of platy minerals, offset by small faults; detrital grains subangular to subrounded and unaltered; cement fills pores in sandy and silty layers as patches of small crystals with sugary texture, generally nonluminescent; pores otherwise filled with silty matrix
microprobe	81	altered volcanic and metamorphic rock fragments up to 2 cm in diameter; minor sandstone clasts	clasts subrounded to rounded; carbonate cement in sandstone clast predates conglomerate cement; matrix is mixture of detrital silt and pore-filling microcrystalline carbonate cement; also small carbonate veins and rims to grains with coarser carbonate; slight orange luminescence to veins and rims, pore cement nonluminescent
microprobe	28	quartz, plagioclase, mica, amphibole; minor pyroxene, metamorphic rock fragments, sulfides, and organic matter	grains angular to subrounded; good alignment of elongate minerals; alteration of some plagioclase, sulfides; pores completely filled with coarsely crystalline homogeneous carbonate cement that shows uniform dull orange luminescence
XRD	35	quartz, plagioclase, amphibole, mica; minor metamorphic rock fragments	grains subangular to subrounded; mostly unaltered, one plagioclase altered to carbonate; carbonate cement is dark, fine-grained, pore filling, very abundant

microprobe	22	quartz, plagioclase, amphibole, mica; minor volcanic rock fragments, sulfides, organic matter	grains subangular to subrounded; scattered broken quartz and feldspar grains with carbonate cemented fractures, kinked mica; minor alteration of plagioclase, pervasive alteration of sulfides, volcanic fragments; pores uniformly filled with coarsely crystalline carbonate cement that luminesces bright orange
microprobe	21 in pores	quartz, plagioclase; minor amphibole, volcanic rock fragments, mica, pyroxene	grains subangular to subrounded; volcanic rock fragments altered; pervasive fine-grained, dark, pore-filling carbonate cement; undeformed sandstone cut by sandy veins up to 5 mm wide with dark, very fine-grained carbonate cement
XRD	9	quartz, plagioclase, volcanic rock fragments, altered opaques; minor amphibole, mica, carbonate	grains subangular to subrounded; opaques and volcanic fragments altered; diagenetic carbonate in small patches of pore-filling cement
XRD	65	quartz, plagioclase; minor volcanic rock fragments	predominantly carbonate cement and large mollusc shell fragments, with minor subangular to rounded sand grains; cement has patchy light and dark appearance largely due to changes from coarse to fine crystal size, respectively; locally, coarse cement appears to fill vugs; shells show no luminescence; cement shows orange luminescence, brightest around vugs(?), suggesting slight increase in Mn content
microprobe	57	quartz, plagioclase, amphibole, mica	grains subangular to subrounded, silt to sand-sized; thin layer of large mudstone clasts; carbonate fills pores and one vug, coarsely crystalline, homogeneous; carbonate luminesces dull orange except at grain rims, which luminesce bright orange