
Errata 2

Fault rock lithologies and architecture of the central Alpine fault, New Zealand, revealed by DFDP-1 drilling

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On page 156, “Stony Creek” is the correct spelling in Figure 1 and the caption.

On page 161 (Table 1. continued), there are eight incorrectly identified figures. The corrected table appears below with corrections in bold.

On page 167, left column, third line, “Fig. 4N” should read “Fig. 4H.”

Corrected “Toy Table 1. (*continued*)” is on the following page.

TABLE 1. CHARACTERISTIC FEATURES OF LITHOLOGICAL UNITS ENCOUNTERED IN DEEP FAULT DRILLING PROJECT (DFDP-1) (continued)

| Unit number | Name | General lithology | Mineralogy and grain sizes | Fabric and microstructure | Notes |
|-------------|---------------------|---|---|---|---|
| 5. | Gouges | Foliated to unfoliated, light olive gray to olive black (5Y 6/1–5Y 2/1), with seams of greenish black (5GY 2/1) and white (N9) to very light-gray (N8) clasts, cemented to uncemented gouges. | As for units 3 and 4, but with significantly more calcite (mostly as cement), and clay (smectite + illite/muscovite ± kaolinite). Matrix grain size <10 µm. Clasts range <1 µm but mostly much less. | Medium brown or gray-blue clay-rich ultra-fine-grained material with a scaly fabric. Layering is indistinct; rarely, subplanar, high aspect ratio, less than centimeter-thick lenses of material with visible versus invisible particles mostly <50% define a fabric parallel to unit boundaries (Fig. 3N). Matrix includes aligned phyllosilicates with uniform extinction and amorphous iron and manganese oxide-hydroxides (Fig. 5D). The subrounded clasts include grains of calcite with narrow e-twins; fine-grained aggregates of calcite with altered (to sericite and saussurite) feldspar (Figs. 5C, 5D, and 5F); recycled ultracataclases/gouges (Fig. 5F) with calcite cement and rarely amygdaloidal material (possible pseudotachylyte; Fig. 5D). Matrix phyllosilicates may wrap clasts ("snowball" fabric of Warr and Cox, 2001; Fig. 5D). Cataclasis with medium to coarse sand (0.5–1 mm) sized, subangular to subrounded qtz-feldspar clasts and matrix proportion from 0% (quite common) to >70%. The unit is poorly indurated but cohesive. Gneissic texture may be defined by elongate muscovite and quartz ribbons composed of numerous blocky, moderately equant grains (Fig. 6C). Feldspar porphyroclasts comprise microcline (note cross-hatched twinning indicated by arrows in Fig. 6C), Myrmekite (Fig. 6B) and flame perthite (Fig. 6A). Rare clasts display interlocking texture of biotite-quartz-feldspar typical of granite (Fig. 6D). Distinctly layered foliated protocataclasis to cataclasis, locally retaining an ultramylonite foliation (sometimes in pods with foliation oblique to contacts with surrounding rock; Fig. 3U). Matrix-supported, cohesive, foliated gray to green clay-rich ultracataclasis to gouge, with clayey matrix and subrounded to subangular, coarse sand-sized (0.5–1 mm) clasts of a quartz-plagioclase-chlorite-rich protolith. | Typically cohesive but uncemented. Upper and lower boundaries of unit are not necessarily parallel. In PSZ-1 in DFDP-1B, the boundary with lower cataclasis has <1-mm-long flame-like injection structures. |
| 6. | Lower cataclases | 6a. White (N9) to very light-gray (N8) and yellowish gray (5Y 8/1) granular cataclasis. 6b. Dark greenish gray (5GY 4/1) foliated cataclasis to fractured protolith. 6c. Unfoliated dark-gray (N3) to dark greenish gray (5GY 4/1) and greenish black (5GY 2/1) clay-rich ultracataclasis to gouge. 6d. Mixture of 6a–6c. Range of colors including those observed in 6a–6c, as well as medium dark-gray (N4) and light olive gray (5Y 6/1). | Quartz + feldspar (may be plagioclase or orthoclase) + chlorite-muscovite + clays (blue-gray; illite/muscovite) ± biotite. Grains in protolith granites and gneisses mostly >>100 µm diameter (Fig. 6). Cataclases comprise patches of clasts <100 µm (Figs. 6B and 6C) in a matrix of grains <30 µm and rarely much larger (millimeter-scale) clasts (Fig. 6D). | Sporadic observations of feldspar and biotite in an interlocking texture strongly suggest a granitic protolith (Fig. 6D). Clast color ranges from light to dark green, black, white, and salmon pink. Granitoid and gneissic textures and high natural gamma values (Townsend et al., 2013) suggest derivation from an Australian plate protolith as discussed in the section entitled "Discussion of Inferred Protoliths". | |
| 7. | Breccias | Unfoliated, dark greenish black (5G 2/1) breccia with remnant mylonitic foliation and white (N9) to very light-gray (N8) porphyroclasts. | Quartz + K-feldspar + amphibole + epidote + chlorite + muscovite + opaques + accessories (e.g., apatite, graphite). Matrix quartz and mica generally tens of micrometers in diameter with larger (>250 µm) feldspar porphyroclasts (Fig. 5H) | Variably cemented protocataclasis to breccia composed of angular-subangular clasts of weakly foliated black mylonite-gneiss that are either augen-bearing or contain quartz segregations. A sandy matrix, may be drilling-induced material or primary. Clasts internally have spaced foliation of quartz bands wrapping feldspar porphyroclasts. There are also phyllosilicates on porphyroclast margins. Quartz bands are subdivided into polygonal aggregates and subgrains in elongate patches with similar extinction reminiscent of stretched larger grains, and rare elongate grains with undulose extinction but no distinct subgrains (Fig. 5H). Gravel composed primarily of angular to subrounded Alpine Schist clasts, ~1–10 cm diameter, in a medium sand matrix. | We cannot say if brecciation is drilling-induced or tectonic. |
| 8. | Sedimentary gravels | Color ranges from white (N9) to grayish black (N2). | | | This unit is only present at the base of DFDP-1a as well as in the Gaunt Creek scarp and terrace exposures. |

Note: Colors used in descriptions in this table accord with Munsell (1912) hues, values, and chroma, and are expressed as codes (e.g., 5N, or 5GY 4/1). These were chosen by reference to The Geological Society of America's *Rock Color Chart*, 7th printing (1991).