

Trip Report - Palmerton, PA, May 31, 2019

Purpose - Reconnoiter the bald rock ridge for crosscutting joints and fractures with white silicified cataclasite defining the structural feature. Make a ground examination with drone pilot Andrew Balliet and discuss the placement of ground control photo panels. Arrive site approximately 10 a.m. Walking over an approximate 18 acre area selected for detailed mapping due to the abundant rock outcrop.

Weather – clear 75 F, slight breeze

Report and Observations -

Parked the car at a wide turnout just west of the Sacred Heart Cemetery and walked south and west slightly. Walked over the bedrock outcrops and immediately identified two locations where someone had struck a blow with a hammer, or hammer like object, and had popped off a portion of the silicified cataclasite. Took Photos 1 and 2 and moved on. Descended below the outcrop to the south and turned to the east, meandering, looking for debitage, specifically trying to locate flakes of the white cataclasite. Periodically went up to the ridge line and crossed over to the north, keeping the same focus.

Eventually, worked our way to a location where the graffiti on the outcrops says “cunt hoe”, obviously a reference to an agricultural implement. This area had contained a clutch of four or five cataclasite flakes staged on a boulder which were photographed on May 9, on the initial trip with G. C. Herman, R. Fimbel and E. Fimbel, Photo 3. The flakes were gone on May 31. This area has an outcrop that is cut with a fracture that has dense silicified cataclasite and slickensides, Photo 4. Striking 170° , dipping 50° northeast, Slickensides were trending 168° , plunging 28° north. Plotted on the paper map as well as possible. Careful examination of ground yielded several fragments of worked cataclasite and one flake that had secondary flaking, implying it was a tool, Photo 5. The secondary flaked object on the upper right may in fact be argillite, closer examination will be made.

Collected several large fragments of the cataclasite from the area of the fracture measurement. Examination of the fractures showed sheeting with the intervening rock occasionally being silicified and with cataclastic deformation. It appeared that thick sheets were not silicified, the silicification penetrates from 1 cm to 2 cm in most cases. Standing back from displaced boulders and upslope outcrops showed the cross fracture trend is present in most exposures as thin wandering quartz healed veinlets, but the offset movement cataclastic texture is relatively rare. The cataclastic surfaces were seen in steep cross cutting features as measured, but also in relatively flat or recumbent attitudes as well. It will take a detailed mapping exercise to figure out what the controls are on the silicification.

One location was seen where two quartz healed fractures had intersected at a shallow angle. At the junction an open low pressure zone had formed a vug with euhedral quartz crystals visible up to 2 mm long.

Continued working east along the ridgeline and found one slab of float with slickensides facing upward. This surface was also blotched with iron oxide staining, Photo 6. This was reminiscent of the photograph of Ed Fimbel's knife, Photo 7.

Conclusion – This brief trip reinforced my preconceived notion that the ancients were selectively seeking and working the silicified white cataclastic fractures. The presence of two closely spaced hammer strikes on this material is not coincidental, but also could be the result from geological collecting (I

personally have collected slickenside surfaces for their beauty and dense polished surfaces). The presence of multiple worked flakes of this material in close association with a prominent sheeted cross fracture is indicative of ancient tool manufacture at one location of the site. The presence of iron oxide staining on one surface with slickensides suggest there was some mineralization that accompanied the silicification, or at a minimum redistributed trace elements inherent in the formation, allowing them to recrystallize in large grain sized mineral aggregates. More work is needed.

Discussion with Andrew Balliet revealed that five control panels are recommended, at each corner and the center of the area. We discussed using white rolled plastic garbage bags, unrolled into a cross at each location, the control point in the center. In addition, with a one hour flight time a 0.5" resolution could be expected. A flight time of 30 minutes could result in 0.7" resolution.

Mark Zdepki, June 1, 2019.

Photo 1: Hammer mark is to right and below the quarter, it is an open parabola shape.



Photo 2: Hammer mark is beneath the quarter and to the left.



Photo 3: Grouping of cataclasite flakes photographed on May 9, 2019.



Photo 4: Silicified cataclasite with slickensides in situ.



Photo 5: Grouping of cataclasite flakes collected May 31, 2019, secondary flaking on upper right piece.



Photo 6: Iron stained cataclasite with slickensides.



Photo 7: Ed Fimbel's Knife with staining.





Photo 8 – Appendix

Four hand specimens collected on May 31, 2019. The largest is a “fish” or “horse” from a sheeted silicified “vein” of cataclasite. It did not appear to be worked, but was collected from float. Above from left to right, an odd ball rock with what appears to be a large quartz pebble that is partially melting and stopped at an instant before the pebble completely is assimilated into the groundmass. Next to the right is a hand sample collected of the pebble sandstone with a thin slickenside cataclasite selvage on one side. Collected from an in situ outcrop at the beginning of the traverse. Third, a hand sample that was staged upon a boulder, among other rocks, long ago. Near circular in plan view, it is composed of silicified cataclasite. It does not appear to be worked by an ancient man.



Photo 9: Hammer resting on recumbent silicified cataclasite. Boulders are in place and show near vertical through going white quartz healed fractures one to right of hammer is curving up through three different boulder layers.



Photo 10: Intersecting quartz healed fractures with a vug formed at the intersection and a euhedral quartz crystal inside. Crystal is about 3 mm long and the C-axis is vertical in this view.