

THE MARJEX CORE FRAME

A portable wooden frame to allow direct measurement of structure in oriented core



1. Features of Frame:

- Compact and portable.
- Built-in compass and clinometer.
- Core support channels do not obscure core surface.
- Bottom-Of Hole orientation line can be accurately positioned by sighting from below.
- Accepts all hole diameters up to PQ and core lengths from 10-40 cm.

2. Frame Set Up:

Place the frame on a suitable base such as a box or low table. The base should meet the following criteria:

- No magnetic components that might disturb a compass (i.e. base made of wood or plastic)
- Stable and horizontal.
- Low enough for the frame to **be easily viewed from all sides and from above.**
- Away from any magnetic disturbance (eg core racks, steel posts)
- Close to core being logged.

3. Frame Orientation

- Raise the core holder to an angle corresponding to the drill hole inclination. Secure at that angle using the inbuilt sliding wedge.
- Slide the compass out from its slot at the back of the frame. Set the rotating bezel to the drill hole azimuth. Replace the compass. Rotate the whole core frame until the compass needle sits on the north mark of the bezel.
- Using a geologists' compass, check frame inclination for accuracy.
- Drape a sample bag, half-filled with loose sand, across the base of the frame to secure against knocks.
Fold down core support base



4. Core Set Up

- Fold down the basal core support plate.
- Carefully place core on rubber core supports with down-core arrow facing down.
- Rotate core so that the Bottom-Of-Hole core orientation line lies between the two parallel core support runners (sight from below).
- Secure core to frame with large rubber band

5. Measuring Structures

The core is now in exactly the same orientation as it was when in the ground. Structures in the core can now be measured with a geologist's compass in exactly the same way as structures in outcrop.

Common **planar structures** are bedding planes, faults, joints, veins etc... Steep dipping structures, or those exposed as the top surface of the core piece, are easy to measure directly with a compass. However, for accurate measurement, shallow-dipping internal planes require the use of an extension plane and dripper bottle. Proceed as follows (see figure over page):

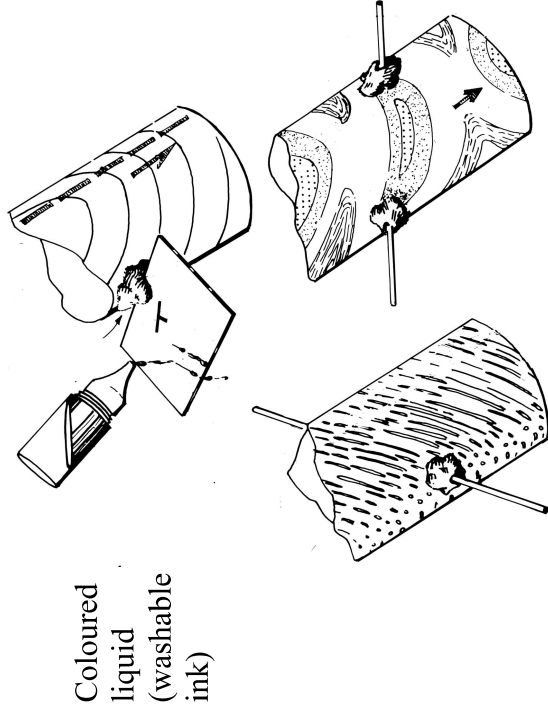
- Attach a small, light and non-magnetic extension plane * to the core surface with self-adhesive putty (i.e. BluTac™). A light plastic card (such as a credit card) makes an ideal extension plane (see diagram and photo).
- Rotate extension plane so as to bring it to lie parallel to the structure to be measured. Accurate parallelism can be judged by eye after viewing extension plane and structure from different angles, including from above.

- Allow a drop of coloured liquid* (washable ink or food colouring) to run down the surface of the extension plane. The bead of liquid will mark the dip and dip direction of the plane.
- Measure the dip and dip direction with a compass by sighting on the bead of liquid.

Common **linear structures** are fold axes, the intersection of two sets of planes, boudins and the preferred orientation of elongate minerals or mineral aggregates. To measure, proceed as follows (see figure below):

- Each linear structure is marked on the core surface by two points: one where it enters the core and one where it leaves the core.
- Use adhesive putty to attach two extension rods* (fine wood dowels such as matchsticks) to the core surface at the entry and exit points of the linear to be measured.
- Rotate the rods to bring them to lie on **a single straight line parallel to the linear**. View from different angles to establish correct orientation. See diagram and photo.
- Measure the trend and plunge of the extension rods by sighting on to them with a geologist's compass in the usual way.

Planes i.e. bedding,
cleavage, tabular veins etc...



Penetrative
Mineral Lineation
and Fold Axes

Use extension plane
and dripper bottle
for accurate
measurement of the
dip and dip direction
of shallow dipping
internal planes

Use extension rods
for measurement of
trend and plunge of
linear structures



Extension plane attached to core with BluTac™



Wooden extension dowels attached to the entry and exit points of a linear feature in core. Note use of sand bag for stability..

6. Additional Information

For further details and discussion on the structural logging of drill core, including when and how to measure alpha/beta angles (an alternative method to using the core frame) refer to: *Geological methods of mineral exploration and mining* (R.W. Marjoribanks, 2nd Ed 2010 published by Springer) or to: *Structural Logging of drill core* (R.W. Marjoribanks, – AIG Handbook 5, 2002, 2003 aig@aig.org.au download pdf free for Members of \$16 for hardcopy).

Wooden components of frame will deteriorate if left for long periods in direct sunlight.

* *Extensions planes, extension rods, adhesive putty and filled dripper bottle are supplied with the complete Core Orientation Kit.*

For problem solving, advice, repairs, replacements etc..apply to:
 Roger Marjoribanks at
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