

Hello students.

My name is Dattaraj Jawdekar.

I work as assistant professor

in Government, College of Arts,

Science and Commerce, Sanquelim, Goa.

Today I'm going to talk on

planar and linear features and

concept of strike and dip.

This is module number 5.

In this topic,

I'm going to cover description of

Lineation and description of planar

features and concept of strike and dip.

After studying this topic,

you will be able to describe

Lineations, will be able to describe

planar features and understand

the concept of strike and deep.

Let us start with linear features.

Lineation is a term that is used

to describe any linear structure

that occurs repetitively in a rock.

So any lineation may not occur only once.

It should occur repetitively in a given rock.

There are two types of Lineations,

primary lineation and secondary lineation.

Primary lineation is the one that a rock

gets at the time of its formation.

Secondary lineation is what the rock gets.

As a result of deformation.

An example of primary lineation

will be alignment of grains of

plagioclase in rocks like trachyte.

And also flute cast in sedimentary rocks.

Secondary lineations result

as a result of deformation.

So for the purpose of this paper,

which is in structural geology,

we are going to concentrate

only on secondary lineation.

Here are some few examples

of secondary lineation.

Slickensides, deformed pebbles and
mechanically rotated minerals.

Pebbles such as quartz pebbles in quartz

Pebble conglomerate may get deformed,
and they may get stretched.

That stretching is a kind of lineation.

Where is some minerals like Hornblende

which are elongated in one axis may

respond to the stress acting on them

and may align in some direction.

If a Pebble is elongated

in East West direction,

it means that it was getting

extended in the East West direction.

Whereas if a grain of hornblende,

for example, if it's if it is

elongated in East West direction,

it means the principal

stress axis was North South.

Here you have an example of another

lineation that is slickensides.

No slickensides are.

Of smooth and polished surface

is that result as a result of

movement along the fault plane?

And slickensides tellors that a

particular area was subject to faulting.

If you move your hands on slickensides,

you may also get probable direction

of movement along the fault plane,

so that is how lineations can be

used in deriving the geological

history of any given area.

Moving on to the planar features.

They are features are those that are

expressed as planes in a body of rock.

Here are a few examples of planar features.

Bedding planes,

which is a junction between two beds.

Cleavage, which is a kind of foliation.

In which the Grains are fine.

Schistosity is a kind of foliation

in which aligned grains have been
recrystallized to a larger grain size.

All this information,

all this data will be useless if we
do not know how to maintain a record
of our observations in the field.

For that several terms such as plunge rake.
trend, strike and dip are used.

Today I'm going to talk

about strike and dip only.

So strike is the direction of a
line formed by intersection of an
inclined plane and a horizontal plane.

So here in this image towards your
left you can see that I have a
green block with inclined face.

I have intersected it with a
plane horizontal plane and that
gives me an intersection which I
marked in red in the right side image.

So that is your strike line if you measure.

The trend of that line with respect to the North you will get strike direction.

On the other hand,

deep is the angle made by a

plane with the horizontal,

which is measured in the vertical plane.

Deep direction is the compass

direction in which the plane slopes.

So if I measure the angle made by that

horizontal with respect to the inclined face,

I will get a dip angle.

In this case this block is dipping

towards the right side of your screen.

Dip as a rule,

is always at 90 degrees to the strike.

This is also the direction in

which you will get maximum slope.

But if the deep is measured in any direction

other than 90 degrees to the strike.

Then the term apparent dip is used.

True Dip is the term that is used

when dip is measured perpendicular

to the strike direction.

As compared to the true dip,

apparent dip is always and always gentler.

And as you approach or as you go away

and away from the true direction,

slope will become gentler and gentler.

Here are some striking deep

symbols that you may need.

So strike is always used

in with a longer line.

The symbol that we use for

the dip is a shorter line,

so in image a I have a plane or

a bed that is striking northeast

and it has a dip due southeast

at an amount of 60 degrees.

B tells you about a horizontal bed,

C is the symbol that we use for vertical bed.

Here are some misconceptions about the

strike line, and I want to clear those.

It is believed that strike

lines are always equidistant,

but that is not the case.

Straight lines will be equidistant only when.

On the bed is dipping at a constant angle,

but if bed becomes deeper,

strike lines will come closer

and when they become gentler,

strike lines will space out.

The second misconception is that

strike lines are always parallel.

Now that is also not correct because

In most of the cases strike lines do converge.

An example would be a plunging fold.

In a case of plunging fold

strike lines converge.

For this topic,

I've referred to structural

geology by MP Billings.

Thank you.