

Geological Mapping Exercise 6 - Answers



An exploration geologist sets out to prepare a geological map and section of the Gum Flat region in which he suspects the presence of a petroleum reservoir. The area is topographically flat and all strata strike east-west.

Commencing at point 'X', he walks due north and notes the following:

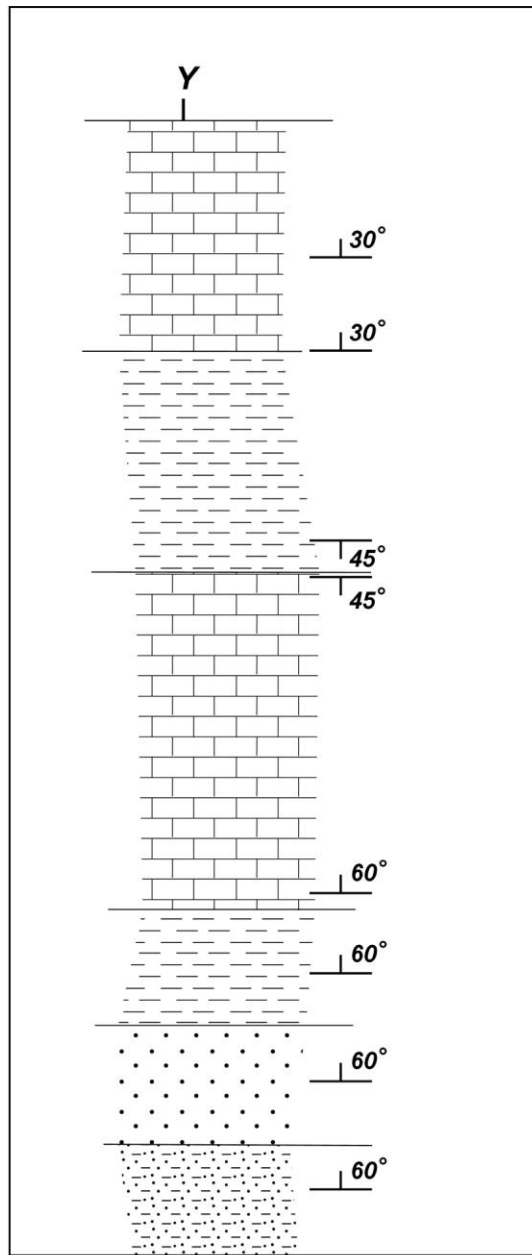
- 0-150 metres: impervious siltstone; dip 60°N
- 150-310 metres: porous sandstone; dip 60°N
 - Oil seep along bedding and joint planes
- 310-450 metres: impervious shale; dip 60°N
- 450-900 metres: limestone; dip 60°N at 450 metres
 - Dip 45°S at 900 metres
- 900-1200 metres: impervious shale; dip 45°S at 900 metres
 - dip 30°N at 1200 metres
- 1200-1500 metres: limestone; dip 30°N

Traverse completed at Y, 1500m from X (start)

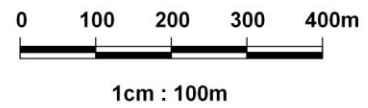
1. On the following page, prepare a map to show the surface distribution of rock types using a scale of 1 cm = 100 m. Use the frame provided and start the traverse at X.

2. In the box provided construct a geological section from X to Y, showing rock strata and structures to a depth of 500m

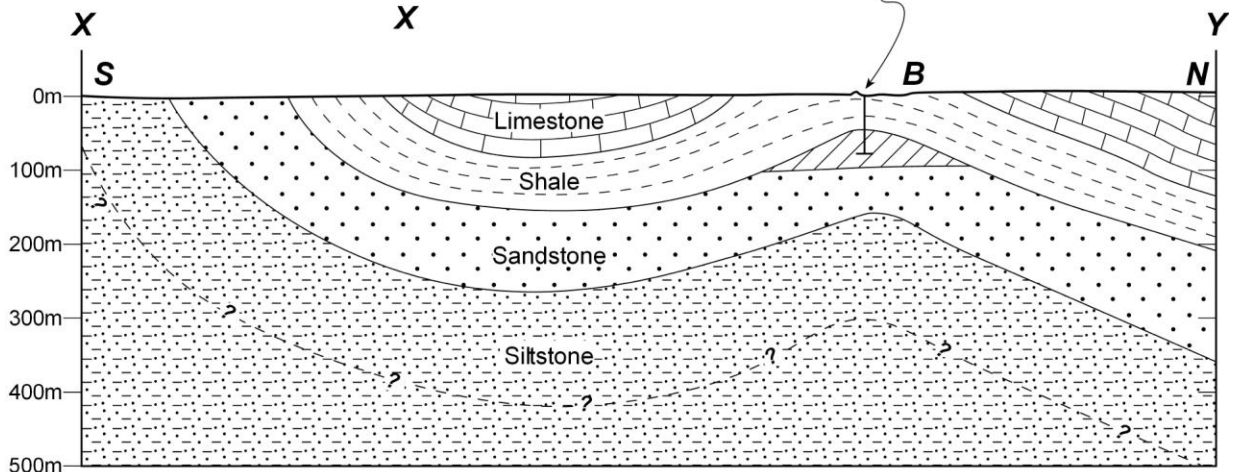
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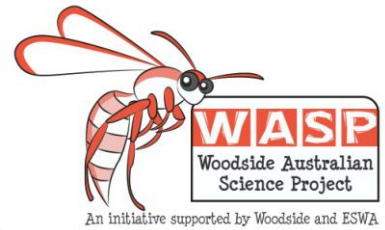
- Siltstone
- Sandstone
- Shale
- Limestone



*Possible place for an oil exploratory well.
Anticline traps oil in porous sandstone which is between impervious siltstone and shale*



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3. Write a geological history of the area.

- Deposition of siltstone
- Deposition of sandstone
- Deposition of shale
- Deposition of limestone
- Folding of sediments

4. Show with the letter B a likely place where an exploratory well for oil could be placed. Give a reason for your answer.

An exploratory well could be drilled at the fold axis for the anticline as the oil could be trapped within the porous sandstone between the impervious siltstone and shale.