

Structural Geology

Practical 4

Stereonet 4

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STEREONETS 4 GEOLOGICAL APPLICATIONS OF STEREONETS

Problem 1

Cambrian quartzites have a strike and dip of 016/23 and rest unconformably on Torridonian Arkoses which strike and dip at 225/5. What was the attitude of the Torridonian arkoses when the Cambrian quartzites were laid down?

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| Answer |
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Problem 2

Bedding within Cambrian quartzites is orientated 116/35, and contain foreset laminae which have a strike and dip of 185/49. What was the flow direction of the current which produced the cross-laminae?

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| Answer |
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Problem 3

A fault cuts Lewisian gneisses and is orientated 320/35. The fault fails to cut the overlying Torridonian arkoses whose bedding is orientated 275/25. What was the attitude of the fault prior to the deposition of the Torridonian?

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| Answer |
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Problem 4

The long axes of flute casts plunge towards 340° on the north-east limb of a fold having zero plunge. Asymmetry of the flute casts indicates a broadly down-dip current direction. The fold limb is orientated 315/75. What was the palaeocurrent direction?

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| Answer |
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Problem 5

The limbs of an anticline have the following attitudes: 230/30 and 085/65. The long axes of trough cross-stratification plunge at 20→095 on the steeply dipping limb and indicate a current direction up-dip of the present attitude of the fold limb. What was the palaeocurrent during deposition?

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| Answer |
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Problem 6 (This was the exam question in 1993).

The orientation of bedding within a fold is presented below in the form of strike and dip.

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|------------|--------|
| Locality 1 | 070/40 |
| Locality 2 | 356/26 |
| Locality 3 | 314/44 |
| Locality 4 | 095/70 |

a) Plot the poles to bedding. What is the orientation of the fold axis?

b) At locality 1, foresets within cross-bedded sandstones have an orientation of 037/57. What was the palaeocurrent direction?

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| Answer |
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