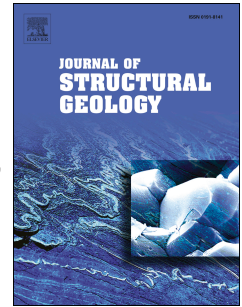


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Folding of a detachment and fault - Modified detachment folding along a lateral ramp, southwestern Montana, USA

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1 **Folding of a detachment and fault - modified detachment folding along a**
2 **lateral ramp, southwestern Montana, USA**

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11 ABSTRACT

12 The inversion of the Middle Proterozoic Belt sedimentary basin during Late Cretaceous
13 thrusting in Montana produced a large eastwardly-convex salient, the southern boundary of
14 which is a 200 km-long oblique to lateral ramp subtended by a detachment between the Belt
15 rocks and Archean basement. A 10 km-long lateral ramp segment exposes the upper levels of the
16 detachment where hanging wall Belt rocks have moved out over the Paleozoic and Mesozoic
17 section. The hanging wall structure consists of a train of high amplitude, faulted, asymmetrical
18 detachment folds. Initial west-east shortening produced layer parallel shortening fabrics and
19 dominantly strike slip faulting followed by symmetrical detachment folding. “Lock-up” of
20 movement on the detachment surface produced regional simple shear and caused the detachment
21 folds to become asymmetrical and faulted. Folding of the detachment surface after lock-up
22 modified the easternmost detachment folds further into a southeast-verging, overturned fold pair
23 with a ramp-related fault along the base of the stretched mutual limb.

24 Keywords: Lateral ramp, Faulted detachment folds, Fault lock-up, Southwestern Montana, Horse
25 blocks

26

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