

LARAMIDE STRESS CONDITIONS AND DEFORMATION MECHANISMS  
DURING THE FORMATION OF DERBY AND DALLAS DOMES,  
WEISER PASS QUADRANGLE, WIND RIVER MOUNTAINS, WYOMING

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ABSTRACT

Uplift of the Wind River Mountains during the Laramide orogeny (ca. 80-40 Ma) produced a NNW-SSE series of southwest-verging, asymmetric, doubly plunging folds along the northeastern margin of the range. This fold series, which has a slightly en echelon alignment, includes Dallas Dome, Derby Dome, and Sheep Mountain anticline – referred to here as the DDS fold line. Geologic mapping and structural analysis of the DDS support a regional NE-SW shortening direction of  $\sim 60/240^\circ$ . However, progressive development of the fold, fault, and fracture features that deform the DDS line of folding is the result of both the regional Laramide stress field and stresses produced more locally by uplift of the adjacent Wind River Mountains along the Wind River thrust. This analysis supports a regional horizontal shortening that produced basement reverse faults and layer parallel shortening that began deforming parts of the DDS fold line by flexural bulge, forced folding, and thrust mechanisms.