



EXPLANATION

STRATIGRAPHY WEST OF GRAND JUNCTION FAULT

- mf Mayo Formation
- cf Crow Formation
- bs bqqs Bugtown Formation
bs, quartz-mica-feldspar schist
bqs, quartz-mica schist
- lf Loues Formation
- vs va Vanderlehr Formation
vs, amphibole schist

LITHOLOGIC UNITS EAST OF GRAND JUNCTION FAULT

- qqqs Quartzite and quartz-mica schist
- qs Quartz-biotite-garnet schist
- ms Mica schist
- qtz Quartzite

Contact
Fault
U, upthrown side, D, downthrown side
Syncline
Showing approximate trace of axial plane
Overturned anticline
Showing approximate trace of axial plane
Overturned syncline
Showing approximate trace of axial plane
Planar and plunge diagrams
All diagrams are lower hemisphere plots

Plunge of lineations
(Predominantly fold axes)

Poles to bedding planes

Poles to foliation planes

b₁, plunge maxima of oldest fold axes and other lineations
b₂, plunge maxima of intermediate fold axes and other lineations
b₃, plunge maxima of youngest fold axes and other lineations
c, plunge maxima of lineations and amygdules in diagram
Beta (β) and beta' (β') are axes of great circles through poles to bedding attitudes

Diagram a. 30 plunge points; contours 18, 12, 6, and >0 percent per 1 percent area
b. 30 plunge points; contours 20, 16, 12, 8, 4, and >0 percent per 1 percent area
c. 184 poles to bedding; contours 20, 16, 12, 8, 4, and >0 percent per 1 percent area. 33 cross-cutting intermediate foliations; contours 18, 9, and >0 percent per 1 percent area. *b₁* and *b₂* are plunge maxima from a small part of the area
d. 75 poles to bedding; contours 12, 9, 6, and >0 percent per 1 percent area. 10 poles to cross-cutting foliations; contours 60, 40, 20, and >0 percent per 1 percent area
e. 164 poles to bedding; contours 9, 6, 3, and >0 percent per 1 percent area
f. 118 poles to bedding; contours 16, 12, 8, 4, and >0 percent per 1 percent area. *b₁* is from diagram h
g. 157 poles to bedding; contours same as diagram f. 25 poles to crosscutting intermediate foliation; contours 50, 25, and 0 percent per 1 percent area. *b₁* and *b₂* are from diagram i
h. 70 plunge points; contours 9, 6, 3, and >0 percent per 1 percent area. Dots are poles to axial planes of *b₁* folds and to slip cleavage
i. 50 plunge points; contours 40, 32, 24, 16, 8, and >0 percent per 1 percent area
j. 220 poles to bedding; contours 20, 15, 10, 5, and >0 percent per 1 percent area. 20 early foliation poles; contours 48, 32, 16, and >0 percent per 1 percent area
k. 67 poles to bedding; contours 10, 7½, 5, 2½, and >0 percent per 1 percent area. 20 plunge points; contours 20, 15, 10, 5, >0 percent per 1 percent area
l. 82 plunge points; contours 25, 20, 15, 10, 5, and >0 percent per 1 percent area

MAP SHOWING MAJOR STRUCTURES AND PLANAR AND PLUNGE DATA
IN THE BERNE QUADRANGLE, BLACK HILLS, SOUTH DAKOTA

