



EXPLANATION

Qal
Valley fill, alluvial fan, and mantle deposits

Tv
Tertiary volcanic rocks

Sedimentary rocks
Shale, siltstone, sandstone, and conglomerate, in part Tertiary, in Soap Valley and Blacktail Valley; of early or middle Tertiary age. Conglomerate, conglomerate, and limestone (T₁) is and adjacent to Blacktail Mountains and Snowcrest Range, probably of early Tertiary age. Calcareous sandstone, siltstone, shale, and grit near Monida and at head of Ruby Valley; may be of Upper Cretaceous age.

ANGULAR UNCONFORMITY
Kk
Sedimentary rocks
Upper part: Predominantly brown sandstone, siltstone, and shale with several lignite beds; fossils from one locality are characteristic of the Mesaverde formation. Lower part: Impure sandstone and black and green shale, with tuffaceous and bentonitic beds near base and lignitic beds near top; belongs to Colorado group.

Lower Cretaceous
Kk
Kootenai formation
Sandstone, in part conglomerate at base, overlying red, green, and buff shale and siltstone; two or three conspicuous limestone units in upper part.

DISCONFORMITY
T₃
Thaynes (?) formation and Woodside (?) shale
Yellow-brown lumpy shale and siltstone with two or three limestone beds.

Lower Triassic
T₃
Dinwoody formation
Thin to medium-bedded limestone and siltstone weathering chocolate brown.

Ferri
Phosphoria formation
Upper part is chert and fine-grained quartzite. Lower part is dark-colored mudstone and siltstone with one or more beds of solid phosphate rock, carbonate rock, chert, and sandstone.

Permian
Cq
Quadrant formation
Thick-bedded white sandstone and quartzite, locally contains a few limestone beds near top and near base.

Carboniferous
Cma
Amesden (?) formation and Madison limestone
Amesden (?) formation is buff- and red-weathering shale, siltstone, and limestone. Madison limestone consists of an upper member of cherty limestone, a middle member of massive gray limestone, and a lower member of platy blue-gray limestone.

Devonian
Djt
Three Forks (?) shale and Jefferson (?) dolomite
Three Forks (?) shale is predominantly dark-colored shale. Jefferson (?) dolomite is massive, black, fossiliferous dolomite in Snowcrest Range; interbedded gray and buff dolomite, limestone, and shale in Blacktail Mountains.

DISCONFORMITY
CD
Undifferentiated Cambrian and Devonian sedimentary rocks along west flank of Snowcrest Range.

Middle and Upper Cambrian
CD
Dry Creek (?) shale, unnamed carbonate rocks, and Wolsey (?) shale, undifferentiated
Dry Creek (?) shale is dark-colored shale; carbonate rocks consist of blue, gray, and buff and red mottled limestone and dolomite. Wolsey (?) shale is red and green.

Middle Cambrian
CF
Flathead quartzite
Pink to red vitreous quartzite; pebbly at base.

ANGULAR UNCONFORMITY
pCgn
Gneissic rocks of probable pre-Cambrian age, cut by small bodies of granitoid intrusive rocks that may be of late Cretaceous and early Tertiary age.

PRE-CAMBRIAN
pC
Marble, quartzite, mica schist, hornblende gneiss, garnet gneiss, and granitic gneiss, may be equivalent in part to the Cherry Creek group and in part to the Pony series of Tansley, Schaffer, and Hart. Also includes non-foliated aplite; pegmatite, and ultra-basic intrusive rocks in the Ruby Range and the Blacktail Mountains which may be of late Cretaceous or early Tertiary age.

Contact
Dashed where approximately located

Fault
Dashed where approximately located, dotted where concealed, U, upthrown side, D, downthrown side

Doubtful or probable fault
Dotted where concealed

Thrust or low angle reverse fault
T, upper plate

Anticline
Dashed where approximately located

Syncline, showing plunge of axis
Dashed where approximately located

Strike and dip of beds
45°
25°

Strike and dip of overturned beds
20°

Strike of vertical beds
20°

Strike and dip of foliation
25°

Strike of vertical foliation
25°

Mine

Base from U. S. Forest Service map of Beaverhead National Forest, edition of 1947

Geology by: M. R. Klepper May-June, 1947

GENERALIZED CROSS SECTIONS

A-A'
10,000'
5,000'
0'

B-B'
10,000'
5,000'
0'

10 Miles

RECONNAISSANCE GEOLOGIC MAP AND SECTIONS OF PART OF BEAVERHEAD AND MADISON COUNTIES, MONTANA