

EXPLANATION

The units are arranged to correspond in general with the occurrence of the formation names from west to east on the map. juxtaposition of formations does not imply precise stratigraphic correlation.
All areas without color or pattern represent rocks younger than Cambrian unless otherwise designated.
Where a letter symbol is followed by (1) the stratigraphic assignment is somewhat uncertain.

Kib

Border zone of Idaho batholith and associated rocks

Granitic gneiss and sedimentary rocks, mostly of Belt age, impregnated with granitic material

C

Cambrian rocks, undifferentiated
Includes Belt Limestone, Fry Creek shale, Hanson formation, Pigeon limestone, Silver Hill formation, Dark shale, Moberg limestone, Wallowa shale, Flathead quartzite, and other units. In a few places quartzite of Cambrian age may be mapped with quartzite of Belt age and conversely.

pEd

Dioritic, metabasitic, dioritic, and related rocks
Primarily dark-gray, fine- to medium-grained dikes and sills, dominantly mafic but contain albite feldspar and microperthite in some areas. The ages of these rocks, including those associated with the Purcell zone in Glacier National Park, have not been definitely established and may range from Precambrian to Cretaceous or Tertiary.

pCm

Chert rocks of the Missoula group
Dark-green-gray and massive thick-bedded siliceous argillite and pink, thick-bedded medium- to coarse-grained arenaceous and pure quartzite with red and buff fine-grained calcareous sandstone and argillite. Includes Abena quartzite and Houding formation of Deina. Distinguished in Sturgis, Silvertip, Ownda and Coopers Lake quadrangles.

pCg

Greenhorn Mountain quartzite of Knopf
Massive to thin-bedded, cross-laminated quartzite, distinguished from overlying Paleozoic rocks by absence of clear micropertite in some areas. Greenhorn Mountain relations between the quartzite of Cambrian and Precambrian are unknown, mapped only in vicinity of Helena. Equivalent to rocks of Cambrian rocks in some other localities.

pCms

Marble shale
Red, purple, light-green, thin-bedded impure argillite, locally weathered with interbedded dark-red quartzite that weathers blackish-red and cross-laminated limestone, mud cracks, ripple marks, and salt casts in upper part. Distinguished only in general vicinity of Helena.

pCh

Helena limestone
Blue-gray and gray, thin- to thick-bedded, siliceous shale and argillite, with some red shale near base. Locally fine-grained, reddish, and white fine-grained quartzite and sandstone, metamorphosed near Marysville. Gradational with Spokane shale below and Helena limestone above. Distinguished only in vicinity of Helena.

pCmt

Carbonate rocks of the Missoula group
Dull gray crystalline dolomite, weathers tan, interbedded with pale-maroon and green-gray, fine-grained argillite and sandstone. Includes Capron limestone of Clapp and Deina. Distinguished in Sturgis, Silvertip, Ownda and Coopers Lake quadrangles.

pCm

Clastic rocks of the Missoula group
Pale-green and massive thin-bedded siliceous argillite interbedded with ripple-marked argillite and interbedded dolomite and quartzite sandstone. Includes Miller Peak argillite of Clapp and Deina. Distinguished in Sturgis, Silvertip, Ownda, and Coopers Lake quadrangles.

pC

Empire shale
Light to dark-greenish-gray dense laminated siliceous shale and argillite, with some red shale near base. Locally fine-grained, reddish, and white fine-grained quartzite and sandstone, metamorphosed near Marysville. Gradational with Spokane shale below and Helena limestone above. Distinguished only in vicinity of Helena.

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Carbonate rocks of the Missoula group
Gray impure limestone, includes Upper Siphax of Clapp and Deina in vicinity of Salmon Lake, McCabe Creek, and the Flatfoot River above Buser; Helena limestone of Clapp and Deina in Ownda and Coopers Lake quadrangles; and Upper Siphax or Wallace of Clapp in Swan Range.

pCm

Spokane shale
Red to purple-red argillaceous, arenaceous micaceous shale with a few green and gray layers or zones, some argillite, fine-grained sandstone, quartzite, and locally, buff impure limestone; grades into the Empire shale above and the Oregon shale below. The name has been used over a wide area in Montana, but in a strict sense it can be used safely only in the vicinity of Helena.

pCm

Clastic rocks of the Missoula group
Red argillite, includes Spokane quartzite of Clapp and Deina in Ownda and Coopers Lake quadrangles and red and green argillite below in Siphax or Wallace of Clapp in Swan Range.

pCm

Oregon shale
Dark-blue to dark-gray dense thin-bedded and cross-laminated argillite and arenaceous micaceous shale, with some red shale near base. Locally fine-grained, reddish, and white fine-grained quartzite and sandstone, metamorphosed near Marysville. Gradational with Spokane shale below and the Spokane shale above. Distinguished only in vicinity of Helena.

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Newland limestone
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