UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Preliminary Reconnaissance Geologic Map of the Copper Mountain Quadrangle, Lemhi County, Idaho

by

G. F. Embree[2], R. D. Hoggan[2], and E. J. William[2]

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This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

[2] Department of Geology
Ricks College, Rexburg, ID 83440

DESCRIPTION OF ROCK UNITS

Qav AVALANCHE DEPOSITS (HOLOCENE)--Unsorted angular clasts of various sizes interspersed with tree fragments and unconsolidated sediment; at the bottom of avalanche chutes

Qal ALLUVIUM (HOLOCENE)--Deposits composed of detritus ranging from unsorted to sorted, subangular to subrounded, boulder to silt-sized clasts of various lithologies. Mapped in larger stream valleys

Of ALLUVIAL FAN DEPOSITS (HOLOCENE)--Gravel mixed with sand, silt, and clay

Qls LANDSLIDE DEPOSITS (HOLOCENE)--Angular rock debris and unconsolidated sediment; forms hummocky topography at the base of steep slopes

Qrg ROCK GLACIER (HOLOCENE)--Angular boulders and cobbles; noted only near the head of Timber Canyon, northwest of Copper Mountain

Qm GLACIAL DEPOSITS (PLEISTOCENE)--Unsorted subangular limestone boulders as much as 2 m (6 ft) across. Forms rounded hills with poor drainage; includes moderate- to well-developed soil between boulders. Resulted from Wisconsin Glaciation or older (possibly Bull Lake age); noted only near the head of Timber Canyon in sec. 14, T. 10 N., R. 30 E.

Te TUFF OF BLUE CREEK AND TUFF OF EDIE RANCH, UNDIVIDED (MIOCENE)--Tuff of Blue Creek is a gray, devitrified, platy, densely welded tuff with phenocrysts of plagioclase which locally overlies the Tuff of Edie Ranch, a gray to red, mostly devitrified ash-flow tuff containing about 10 percent phenocrysts of plagioclase, sanidine, quartz, and clinopyroxene

Tg GRAVEL (MIOCENE)--Porrly sorted, boulder- to pebble-size, angular to subrounded clasts of quartzitic sandstone and gray limestone cemented by calcite. Shows poorly defined irregular bedding. Mapped only in Bear Wallow and Long Canyons

PPsc SNAKY CANYON FORMATION (LOWER PERMIAN TO LOWER PENNSYLVANIAN)--Medium- to light-gray, medium- to thin-bedded, microcrystalline to medium grained limestone and dolomite, commonly containing sandy and silty units. Many beds contain abundant brachiopods, bryozoans, corals, and locally, fusilinids. Stromatolitic mounds abundant; nodular and bedded chert also present. Interbedded thin calcareous sandstone is medium gray, pale red to orange and weathers light gray to light brown; the sandstone is very fine to fine grained. This unit includes the Gallagher Peak Sandstone and Bloom Members. The formation appears to be about 700 m (2,300 ft) thick but may be partly repeated due to thrust faulting

PMbm BLUEBIRD MOUNTAIN FORMATION (LOWER PENNSYLVANIAN AND UPPER MISSISSIPPIAN)--Medium- to medium-light-gray, pink, red, and green; very fine grained, generally quartzitic, mostly thin-bedded, cliff-forming sandstone. Siliceous nodules present in several beds. Contains some interbedded gray dolomite and limestone. Thickness of 105 m (345 ft) was measured west of Gallagher Peak along type section of formation (Skipp, B. and others, 1979)

Mbs BIG SNOWY FORMATION (UPPER MISSISSIPPIAN)--Black shale interbedded with thin-bedded, gray to brown, richly fossiliferous limestone which contains tabulate corals, brachiopods and other bivalves. Very fine grained sandstone units that weather brown, red and yellow are also present and can generally be distinguished from the sandstone of the overlying formation by the presence of calcareous cement. Landslides and springs are common in this formation. Shales of this unit constitute a zone of structural incompetence between the more competent sandstone above and the limestone below. Thickness is about 120 m (395 ft)

Ms SURRETT CANYON AND SOUTH CREEK FORMATIONS, UNDIVIDED (UPPER MISSISSIPPIAN)--Surrett Canyon Formation is dark, fossiliferous limestone and the South Creek Formation is predominantly gray, thin-bedded, unfossiliferous limestone. There appears to be a structural discordance between these units and the underlying limestone formation. This discordance is most apparent on the west face of Copper Mountain and is the basis for the fault contact between these and the underlying unit. Combined units are about 200 m (655 ft)

Msu SURRETT CANYON FORMATION (UPPER MISSISSIPPIAN)

Msc SOUTH CREEK FROMATION (UPPER MISSISSIPPIAN)

Msp UPPER PART OF SCOTT PEAK FORMATION (UPPER MISSISSIPPIAN)--Very thick bedded units of fossiliferous crinoidal and pelletal limestone. Thickness ranges from about 300-400 m (about 985-1,310 ft)

Msh LOWER PART OF SCOTT PEAK FORMATION, MIDDLE CANYON FORMATION AND MCGOWAN CREEK FORMATION, UNDIVIDED (UPPER AND LOWER MISSISSIPPIAN)--The lower part of the Upper Mississippian Scott Peak Formation at the top of the map unit is crinoidal limestone; the Upper and Lower Mississippian Middle Canyon Formation is mainly sandy to silty limestone which weathers brown. The Lower Mississippian McGowan Creek Formation is mostly dark-gray fissile shale but locally includes beds of limestone 3-6 m (10-20 ft) thick. The shale commonly is intensely sheared along a prominent north-northwest trending shear zone in the western part of the quadrangle. The average thickness of the unit is about 1,000 m (3,300 ft)

Dj JEFFERSON FORMATION (UPPER AND MIDDLE DEVONIAN)--Mainly dark gray to brown, fine grained dolomite, but includes, in the northwestern part of the map area, limestone at the top of the unit; the limestone is characterized by abundant solution cavities. In the southern part of the map area, the unit lies on the Precambrian rocks and has a 0.5 m (1.5 ft) thick basal conglomeratic sandstone unit that contains quartzite clasts up to 5 cm (2 in) in diameter. A measured section in Long Canyon is 65 m (215 ft) thick

Ok KINNIKINIC QUARTZITE (MIDDLE ORDOVICIAN)--Subrounded to rounded quartz grains in silica cement. The lower 3-6 m(10-20 ft) of the unit is characteristically tan to brown in the northern part of the map area. The formation lies, with pronounced angular discordance on the underlying Precambrian quartzite; this unconformity is well exposed in Skull Canyon. South of Skull Canyon, the unit wedges out from beneath the overlying Jefferson Formation and the underlying quartzite. Thickness ranges from 0-30 m (0-100 ft)

p€q QUARTZITE (PRECAMBRIAN)--Predominantly medium- to coarse-grained feldspathic quartzite with about 10-20 percent feldspar grains. Crossbedded in 0.3-0.6 m (1-2 ft) sets. Color ranges from tan and dark brown in the upper part to purple in the basal exposures. Base not exposed; maximum exposed thickness is about 600 m (1,970 ft)

References cited

Skipp, B., Hoggan, R. D., Schleicher, D. L., and Douglass, R. C., 1979, Upper Paleozoic carbonate bank in east-central Idaho-Snaky Canyon, Bluebird Mountain, and Arco Hills Formations, and their paleotectonic significance: U.S. Geological Survey Bulletin 1486, 78 p.

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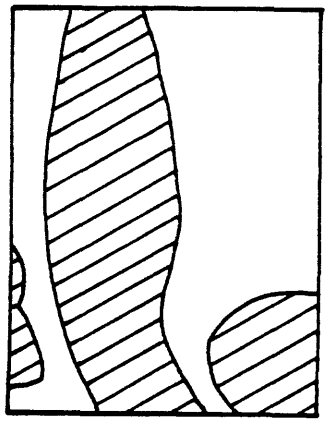
Copper Mt

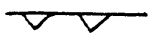


Sketch map showing areas mapped by photogeologic methods (cross hatched)

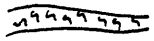
EXPLANATION

CONTACT--Dashed where approximately located, dotted where concealed

NORMAL FAULT--Dashed where approximately located, dotted where concealed; bar and ball on downthrown side

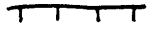


LOW ANGLE FAULT--Teeth on downthrown side



SHEAR ZONE--East side has moved down relative to west side

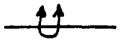
DECOLLEMENT--Sawteeth on upper plate



SLUMP BOUNDARY--Hachures on side of slump block

FOLDS--Showing trace of axial plane; dashed where approximately located, dotted where concealed

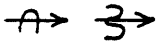
Anticline--



Overturned anticline--showing direction of dip of limbs

Syncline--

Overturned syncline--showing direction of dip of limbs



Axial trend of small folds--patterns show general shapes and orientations of folds

STRIKE AND DIP OF BEDS

Horizontal

Inclined

Vertical

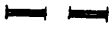
Overturned

SHEAR PLANE

JOINT

MINE OR PROSPECT

AVALANCHE CHUTE



LINE OF MEASURED SECTION--Type section of the Bluebird Mountain Formation and Bloom Member of the Snaky Canyon Formation (Skipp and others, 1979).

CORRELATION OF MAP UNITS