THE GEOLOGICAL SURVEY OF WYOMING
Gary B. Glass, State Geologist

Cartography by Fred H. Porter III.

Base from U. S. Geological Survey.

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

GEOLOGIC MAP OF THE RADIUM SPRINGS QUADRANGLE, INCLUDING THE LEWISTON GOLD DISTRICT, FREMONT COUNTY, WYOMING

by
W. Dan Hausel
1988

EXPLANATION

PHANEROZOIC SEDIMENTARY ROCKS AND SURFICIAL DEPOSITS

QUATERNARY

Qal — QUATERNARY ALLUVIUM — Unconsolidated stream gravel, sand, silt, and clay. Locally, includes placer accumulations of gold.

TERTIARY

unconformity

Pliocene and Miocene — **Tspt**, **Tsp**

SOUTH PASS FORMATION (PLIOCENE AND MIOCENE)

Tspt, tuffaceous siltstone — white to tan.

Tsp, highly variable sequence of rocks dominated by conglomerate with lesser interbedded sandstone and siltstone. Conglomerate is gray and contains cobbles, pebbles, and boulders eroded from the metamorphic and plutonic rocks of the South Pass granite-greenstone terrane in a fine-grained ashy sandstone matrix.[1] Pliocene to Miocene age, although portions may be Eocene; fission-track age about 27 million years[2]. Locally, may contain gold.

unconformity

Miocene — **Ta**

ARIKAREE FORMATION (MIOCENE) — Fine-grained, light gray, tuffaceous sandstone and siltstone of Miocene age.[1,2]

CAMBRIAN

Cf — FLATHEAD FORMATION (CAMBRIAN) — Dull red, crossbedded, quartzitic sandstone and conglomerate with quartz pebbles.

PROTEROZOIC AND PROTEROZOIC?

INTRUSIVE IGNEOUS ROCKS

unconformity

bd — BASALT DIKES (PROTEROZOIC) — Fine-grained, dark gray to black, mafic dikes with tholeiitic composition. Similar basalt and diabase dikes found elsewhere in the Wind River Range have yielded whole-rock K-Ar ages of 1,270 and 2,010 million years[3]. K-Ar ages from pyroxenes are restricted to 1.6 to 1.8 billion years[4].

qd — QUARTZ DIORITE DIKE (PROTEROZOIC?) — Gray to pink, fine- to medium-grained, leucocratic, quartz diorite dike.

g — GRANITE (ARCHEAN) — Gray to pink, granitic to granodioritic rocks, possibly equivalent to the Granite Mountains batholith (approximately 2,550 million years[5]) or the Louis Lake batholith (approximately 2.6 billion years[6]).

ARCHEAN

SUPRACRUSTAL METASEDIMENTARY AND METAIGNEOUS ROCKS

mdc, mdg, mdp, mdg, mdq

MINERS DELIGHT FORMATION (ARCHEAN)

mdg, metagreywacke — chiefly gray feldspathic and biotitic metagreywacke with minor mica schist and volcaniclastics that are host to the principal known gold deposits in the Lewiston district. Rb-Sr whole-rock isochron about 2.8 billion years[6].

mdc, metachert — black, banded metachert.

mdp, metapelite — pelitic schist, muscovite schist, and phyllite.

mdq, chlorite schist — fine-grained, foliated, chloritic schist and chloritic metagreywacke.

rmd, rmg

ROUNDTOP MOUNTAIN GREENSTONE (ARCHEAN)

rmd, mafic dikes — medium- to coarse-grained, weakly to moderately foliated, hornblendic amphibolite and metagabbro with tholeiitic affinity.

rmg, amphibolite — fine- to medium-grained, weakly to strongly foliated, hornblendic amphibolite, with less common massive metabasalt, spotted (clinozoisite) metabasalt, and rare vesicular metabasalt of tholeiitic chemistry[7]. Thin beds of mica schist and metagreywacke less common. These rocks are interpreted to be equivalent to tholeiitic amphibolite and greenstone in the vicinity of Roundtop Mountain along the northwestern flank of the South Pass granite-greenstone belt.

REFERENCES

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This quadrangle was mapped during portions of the 1984 and 1985 field seasons as part of a cooperative project (COGEOMAP) between the Geological Survey of Wyoming and U.S. Geological Survey. Funding was obtained from the Geological Survey of Wyoming's general operating budget and from U.S. Geological Survey grant 14-08-0001-AG226. The views and conclusions of this map are those of the author and should not be interpreted as necessarily representing official policies, either expressed or implied, of the U.S. Government.

MAP SYMBOLS

CONTACT

Dashed where approximately located.

FAULT

Dashed where approximately located. Letters indicate direction of relative vertical movement (U=up; D=down).

SHEAR ZONE

Cataclastic zone of sheared metagreywacke with common quartz lenses that are also sheared. The sheared metagreywacke and adjacent wall rock often exhibit distinct reddish hematitic and greenish chloritic alteration. Shear zones often yield anomalous gold with occasional rich ore shoots. Gold occurs as fracture fillings in quartz, associated with pyrite, and possibly in altered metagreywacke. Direction and amount of dip shown.

MAJOR FOLDS

Antiform

Synform

FOLIATION TRENDS

Lineation trend (bedding or foliation).

Vertical

Inclined, showing dip.

JOINTS

Vertical

Inclined, showing dip.

BEDDING

Vertical

Inclined, showing dip.

Graded beds(?), arrow indicates top. These are highly speculative and could also represent tectonic fabrics.

MINE- AND VEIN-RELATED SYMBOLS

Hematite-chlorite alteration halo.

Adit (accessible in 1984)

Caved adit (inaccessible in 1984)

Shaft

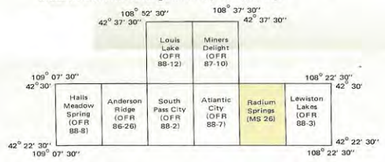
Inclined shaft

Dredge tailings

Open pit mine

Historic Lewis Mill site

Prospect pit (Cu = copper)

Quartz vein — dashed where approximately located. Direction and amount of dip shown.

Geologic Quadrangle maps of the southern Wind River Range available from the Geological Survey of Wyoming.