



BASE BY U.S. GEOLOGICAL SURVEY, 1956

SCALE 1:250000

CONTOUR INTERVAL 200 FEET (UNLESS OTHERWISE INDICATED)

20 KILOMETERS

Geology by: I. L. Tallner, 1965; W. H. Patton, T. P. Miller, 1965; W. P. Brosge, M. H. Baker, J. L. Tallner, 1966; C. E. Fritts, G. H. Pessel, G. S. Collins, J. L. Tallner, R. E. Garland, 1972; J. L. Tallner, W. P. Brosge, G. H. Pessel, R. E. Garland, 1976; J. L. Tallner, W. P. Brosge, G. H. Pessel, 1976.

EXPLANATION OF SYMBOLS

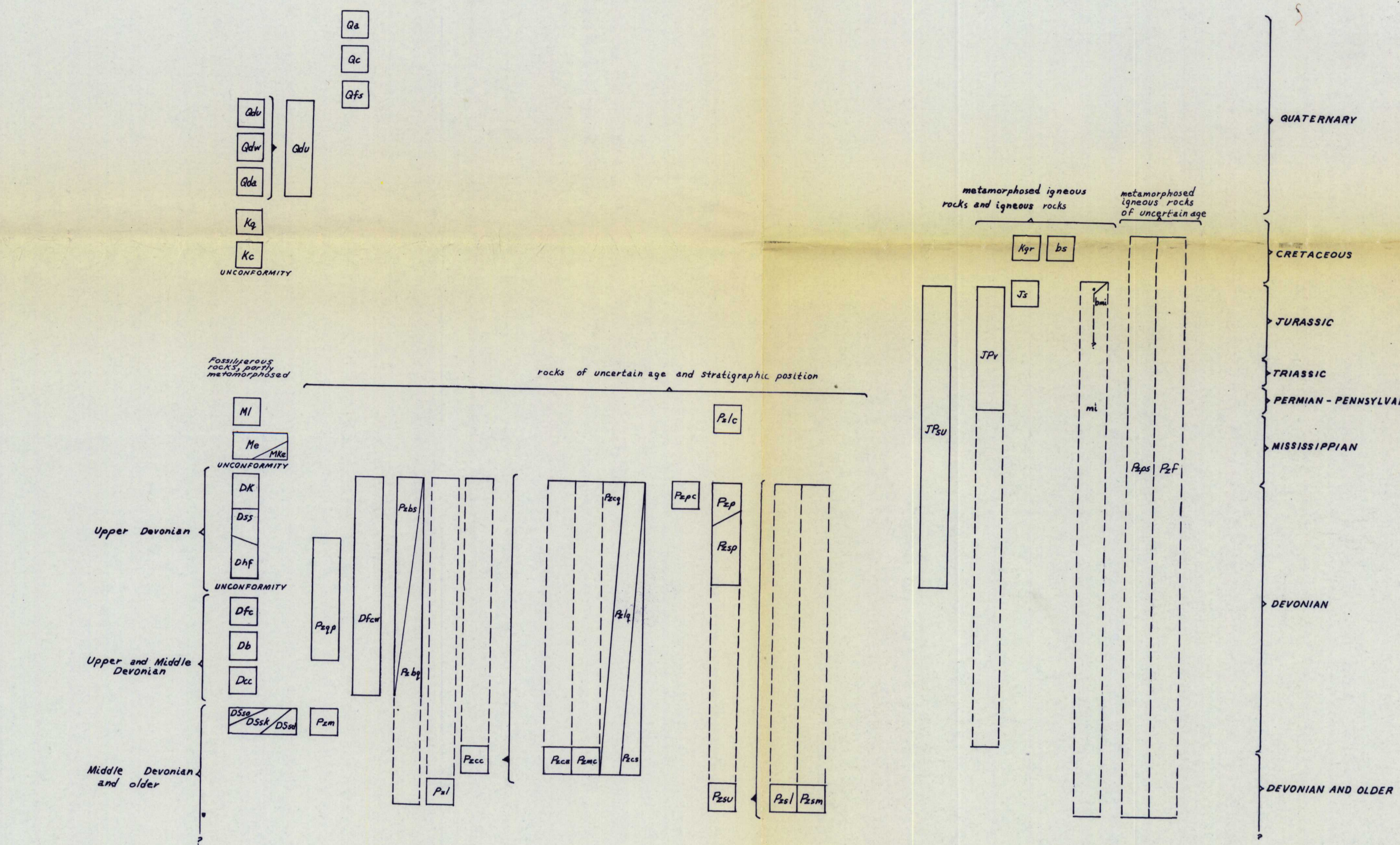
- Drainage channels
- Surface water
- Fault
- Strike-slip fault
- Thrust fault
- Axis of anticline
- Axis of syncline
- Strike-slip fault with slicken sense
- Thrust fault with slicken sense
- Axis of anticline with slicken sense
- Axis of syncline with slicken sense

REFERENCES

- Alaska Division of Geological and Geophysical Surveys, 1973, *Annual Report State of Alaska, Department of Natural Resources*, 59 p.
- Fritts, C.E., 1970, *Geology and geomorphology of the Coombs Hills, Ambler River and Shungnak quadrangles, Alaska*, Alaska Div. of Mines and Geology, Report No. 59.
- Patton, W.H., Jr., Miller, T.P., and Dullmeier, I.L., 1965, *Regional geologic map of the Shungnak and southern part of the Ambler River quadrangles, Alaska*, U.S. Geological Survey Misc. Geol. Inv. Map 1 554.

- Pessel, G.H., Garland, R.E., Tallner, J.L., and Eaton, G.S., 1973, *Preliminary geologic map of southeastern Ambler River and southwestern Survey Pass quadrangles, Alaska*, Alaska Div. of Geol. and Geoph. Surveys open file report No. 28.
- Willet, M., 1975, *Preliminary geologic map of the Arctic Camp prospect, Ambler River quadrangle, Alaska*, Alaska Div. of Geol. and Geoph. Surveys open file report No. 60.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Qa ALLUVIUM
- Qc COLLUVIUM
- Qd UNCONSOLIDATED SAND
- Qd1 UNCONSOLIDATED SAND AND FINE SEDIMENTS
- Qd2 ULMAN DRIFT
- Qd3 WALKER DRIFT
- Qd4 AMBLER DRIFT
- Qd5 UNDIFFERENTIATED DRIFT
- Kc QUARTZ CONGLOMERATE, quartz-peggle conglomerate with a quartzose matrix, some clasts of chert, schist, and gneiss; some interbedded quartzose sandstone and mudstone.
- Kc IGNEOUS PEBBLE CONGLOMERATE, massive, poorly sorted, poorly stratified pebble to cobble conglomerate. Clasts of extrusive and intrusive igneous rocks in a graywacke and mudstone matrix. Some clasts of chert and mudstone. Probably Early Cretaceous (Albian) age (Patton, Miller and Tallner, 1968).
- MI LISBUNE GROUP, light gray and dark gray limestone and marble, generally cherty, fossiliferous in part.
- Me ENDOCOTT GROUP, undifferentiated black shale and calcareous shale of the Kayak Shale, and quartzite and conglomerate of the Kakituk Conglomerate.
- Me KAKITUK CONGLOMERATE, gray-green, massive, quartz and chert-peggle conglomerate, quartzite, and sandstone, minor amounts of dark shale.
- Da KANAYUT CONGLOMERATE, gray-green, massive quartz and chert-peggle conglomerate, quartzite, and sandstone with some shale.
- Dsa SANDSTONE, gray-green, thin-bedded, limonitic sandstone, partly calcareous, gradational with the Kanayut Conglomerate (Da).
- DHf HUNT FORK SHALE, black shale, slate, and phyllite, with some interbedded sandstone and quartzite; lenses of brown, limonitic limestone.
- Dfc SILTSTONE AND PHYLITE, light brown and orange weathering, gray, calcareous siltstone and phyllite; minor amounts of sandstone, conglomerate, and dark-gray phyllite.
- Dd LIMESTONE AND PHYLITE, interbedded black calcareous phyllite and black argillaceous limestone.
- Dcc CHLORITIC PHYLITE, green, chloritic, calcareous phyllite, siltstone and grit.
- Ds6 SKAJIT LIMESTONE, mostly light-gray, massive marble, highly-sheared and folded in part.
- D5a ORANGE MARBLE, orange weathering, medium to coarse grain, chloritic marble, highly sheared in part; boudins and sills of chloritic gneissstone.
- D5d DARK GRAY MARBLE, dark-gray, dark weathering limestone and marble.

ROCKS OF UNCERTAIN AGE AND STRATIGRAPHIC POSITION

- Dfwa WACKE, brown to green calcareous wacke and dark-gray volcanic wacke.
- Pd1b BLACK SILTSTONE, black, soft siltstone and sandy siltstone
- Pd1c BLACK QUARTZITE, black, fine-grain quartzite, probably metamorphosed in part, but mostly associated with units in Ppa and Ppc.
- Pp PHYLITE, brown to dark gray phyllite and slate, commonly sericitic; gradational into quartz-mica schist (Ppa).
- Ppa PHYLITIC SCHIST, transitional stage between Pp and Ppa.
- Ppc PHYLITE AND CHERT, interbedded phyllite and gray chert. Probably an equivalent of Pp. Mapped only in T. 22 N., R. 3 E.
- Pm MASSIVE LIMESTONE, massive, gray limestone, probably associated with the Skajit Limestone (Dsa), but stratigraphic position uncertain.
- Pap QUARTZ-PHYLLITE, light-gray, fine to medium grain quartzite interbedded with brown and gray phyllite.
- Pac UNDIFFERENTIATED CHLORITE SCHIST, mostly quartz-chlorite-albite\* calcite schist with abundant lenses and beds of marble locally. Carbonates differentiated as Pz1 where possible. Includes units of Pcc, Pz1, Pz2, Pz3, Pz4, and Pz5. This unit is probably older than the Skajit Limestone (Dsa) in part, and may contain units as old as Middle Ordovician.
- Pzc CHLORITIC QUARTZITE, mostly quartz-albite-chlorite\* magnetite schist and schistose quartzite. Contains some boudins of schistose gneissstone.
- Pz1 LIMESTONE-QUARTZITE, interbedded quartz-albite-muscovite schist, quartzite, and light gray marble. Marbles are differentiated as Pz1 where possible.
- Pzc CALC-SCHIST, mostly quartz-albite-calcite schist, but considerable variation in composition. Assemblages containing epidote, muscovite and actinolite are common.
- Pmc CHLORITIC MARBLE, mostly orange-weathering chloritic marble, probably equivalent to D5a in part.
- Pmz META-APLITE (?), K-feldspar-quartz-albite\* calcite schists. May be metamorphosed aplite.
- Ppa UNDIFFERENTIATED QUARTZ-MICA SCHIST, mostly quartz-mica schist with minor amounts of chlorite schist, gneiss, marble, and felsic schist. Includes units of Pz1, Pz2, and Pz3. This unit appears to be structurally below the various units in Pcc, and thus could be older than both that unit and the Skajit Limestone, but the age is very uncertain. The unit may be a structural mixture of units of several ages, from as young as Devonian to Ordovician and older.
- Pz1 MARBLE, mostly light-gray, medium-grain marble; generally highly sheared. Includes fossiliferous recrystallized Devonian limestone in Coombs Hills (Patton, Miller and Tallner, 1968).
- Pz2 MASSIVE QUARTZ-MICA SCHIST, orange-weathering quartz-mica schist, commonly granitic, generally more resistant than the surrounding schist and phyllite. White quartz veins abundant locally.
- Pz1 CALcareous SCHIST, brown-weathering calcareous schist.
- Pz1 CHERTY LIMESTONE, interbedded chert and marble and cherty marble, generally highly sheared and folded. Probably a metamorphosed equivalent of Lisburne Group carbonate (Mi). Mapped only in three small exposures, T. 19 N., R. 9 E.; T. 22 N., R. 3 E.; and T. 20 N., R. 9 E.
- Ppa UNDIFFERENTIATED PHYLITE AND MAFIC IGNEOUS ROCKS, mafic igneous rocks of Pp interbedded or structurally mixed with phyllites of Pp.
- IGNEOUS ROCKS
- Jp MAFIC IGNEOUS ROCKS, slightly metamorphosed mafic hypabyssal and volcanic rocks. Possibly Jurassic in age (Patton, Miller, and Tallner, 1968), but may be as old as Devonian (Fritts, 1970).
- Js SERPENTINITE, partially serpentinized peridotite and dunite, highly sheared locally. Possibly Jurassic in age (Patton, Miller, and Tallner, 1968).
- Jgr GRANITE, plutonic rocks consisting mostly of quartz-perthitic K-feldspar-sodic plagioclase-muscovite-biotite granites; biotite commonly altered to chlorite; generally foliated and sheared. The pluton west of the Kopolukuk River has a potassium-argon age-date of 98 million years (Patton et al., 1975).
- bi BIOTITE SCHIST, plagioclase-quartz-biotite schist; possibly a metamorphosed granulite; probably related to the intrusion of the granite (Jgr).
- nl ORETIENITE, metamorphosed basalt, dacite, and other volcanic rocks. Pillows are reported in some localities. Age is very uncertain, but probably equivalent to Jp in part.
- ba GLAUCOPHANE BEARING GREENSTONE, glaucophane-garnet greenstone, including various metamorphosed mafic igneous rocks. Jadeite reported in one locality several miles south of WAK RUBY.
- METAMORPHOSSED IGNEOUS ROCKS OF UNCERTAIN AGE
- Ppa PORPHYROBLASTIC SCHIST, quartz-albite-K-feldspar-muscovite\* biotite schist with porphyroblasts of K-feldspar. Interpreted to be meta-ryholite by most mining geologists (Willet, 1975).
- Pz1 FELSIC SCHIST, mostly quartz-albite-K-feldspar schist; generally fine-grained, massive in part. Probably metamorphosed acidic igneous rocks, including rhyolite and apite.

Copper deposits, stream-sediment anomalies and large groups of claims made in the last 10 years (Alaska Div. Geol. and Geophys. Surveys, 1973, p. 8) occur in a zone along the strike of units ba, Ppa and Pz1.

PRELIMINARY RECONNAISSANCE GEOLOGIC MAP OF AMBLER RIVER QUADRANGLE, ALASKA

Compiled by G. H. Pessel and W. P. Brosge

1977

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