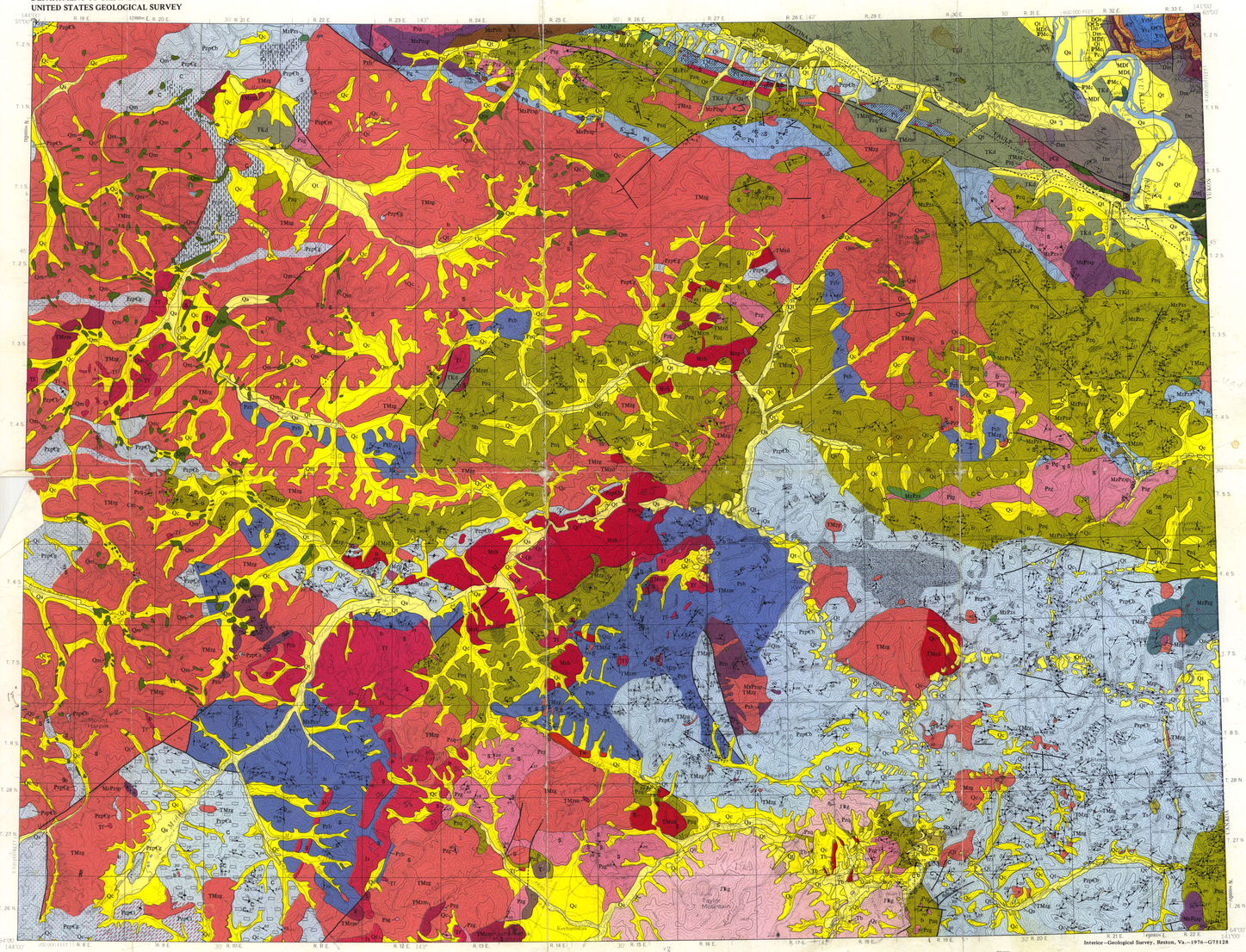
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-922



Base from U.S. Geological Survey, 1957
100,000-foot grid based on Alaska coordinate system, zone 2
10,000-metre Universal Transverse Mercator grid ticks, zone 7

SCALE 1:250,000
5 0 5 10 15 MILES
5 0 5 10 15 KILOMETRES

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL
1976 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 29° 30' TO 31° 00' EAST

ALASKA
QUADRANGLE LOCATION

GEOLOGIC MAP OF THE EAGLE QUADRANGLE, ALASKA

Compiled by
Helen L. Foster

1976

CORRELATION OF MAP UNITS

Qs	Holocene	QUATERNARY	CENOZOIC
Qt			
Qt'	Holocene and (or) Pleistocene		
Qm	Pleistocene		
Ts		TERTIARY	
TKd	Pliocene(?) to Upper Cretaceous(?)	TERTIARY(?) TO CRETACEOUS(?)	CENOZOIC AND (OR) MESOZOIC

NORTH OF TINTINA FAULT

Igneous rocks

Pc	PERMIAN(?)		
Disconformity(?)			
PPSc	Lower Pennsylvanian and Upper Mississippian	PENNSYLVANIAN AND MISSISSIPPIAN	PALEOZOIC
MDf	Upper Mississippian to Lower Devonian	MISSISSIPPIAN AND DEVONIAN	
Dn	Upper Devonian	DEVONIAN	
Dm	Upper, Middle, and Lower Devonian		
Disconformity			
DOr	Lower Devonian to Lower Ordovician	DEVONIAN, SILURIAN, AND ORDOVICIAN	
Disconformity			
OCa	Lower Ordovician to Lower Cambrian	ORDOVICIAN	
Ca	Lower Cambrian	CAMBRIAN	
€f			
Yfl	Tindir Group	PRECAMBRIAN Y	PRECAMBRIAN
Yls			
Yfb			
Stratigraphic position uncertain			
pCg		PRECAMBRIAN(?)	
pCp			
pCb			

Igneous and metamorphic rocks

TMzs TMzd TMzg	TERTIARY(?) AND MESOZOIC	Tr Ti Tf Tw	TERTIARY(?) CENOZOIC AND MESOZOIC
Js	Lower Jurassic and (or) Upper Triassic	JURASSIC AND (OR) TRIASSIC	MESOZOIC
JTrg	Dots indicate mafic phase		
MzPzs MzPzsp MzPzh MzPzg MzPzvi		MESOZOIC(?)	MESOZOIC AND (OR) PALEOZOIC
Pzg		PALEOZOIC(?)	PALEOZOIC

Metamorphic rocks, stratigraphic relations unknown

Pq	Unmetamorphosed or metamorphosed to lower greenschist facies	PERMIAN	PALEOZOIC AND (OR) PRECAMBRIAN
Pzs	Area of diagonal lines least metamorphosed		
Greenschist facies	Dominantly upper greenschist and epidote-amphibolite facies	Pzb	
Pzq	Pzb		
Epidote-amphibolite and amphibolite facies	PzpCb PzpCg PzpCm PzpCh PzpCv		

DESCRIPTION OF MAP UNITS

The Tintina fault, a major northwest-trending structure, divides the Eagle quadrangle into two distinctly different geologic provinces. The terrane north of the fault consists of unmetamorphosed sedimentary rocks of Precamb rian to Cenozoic age. The terrane south of the fault consists primarily of metamorphic rocks intruded by granitic plutons of Mesozoic and Cenozoic age. Because of the great difference in the rocks of the two terranes, the terranes are described separately. A few stratigraphic units that occur in either or both terranes are described first.

Qs — ALLUVIUM — Sand, gravel, and silt in active stream channels; includes low terraces. Locally contains organic silt and peat, glacial outwash, and reworked glacial deposits

Qs — ALLUVIUM AND COLLUVIUM — Primarily sand, gravel, and silt in stream valleys and fine to coarse colluvium in heads of valleys and on slopes of valley sides. Talus, including talus cones in the more rugged mountain areas; alluvial fan deposits, till, glacial outwash, lake deposits, organic silt, and peat locally included

Qls — LANDSLIDE DEPOSITS — Mixed coarse and fine unconsolidated debris deposited by landslides and (or) earthflows. Hilly topography with ponds and small lakes characteristic. Small areas of such deposits not mapped

Qt — INTERMEDIATE AND HIGH TERRACE DEPOSITS — Silt, sand, and gravel. Gravel commonly coarse and poorly sorted; stratification poor to good. Windblown silt and sand locally mantle terrace deposits, particularly along the Yukon River. The Fortymile and Seventymile Rivers are deeply entrenched, and broad, gently sloping terrace remnants, some as high as 700 ft (216m) above present streams, are common

Qm — MORAINAL DEPOSITS — Silty sand, gravel, and boulders. Locally includes colluvial material. Mostly end moraine but includes some lateral and ground moraine, morainal material in cirques, and erosional remnants of moraines. Young moraines have typical hummocky topography with numerous undrained depressions and many large unweathered boulders on the surface. Many moraines are crescent shaped and extend completely across the valleys. Older moraines have been modified and have smoother surfaces with weathered and widely scattered boulders. Some moraines have almost completely lost their original topographic expression and are represented only by patches of weathered till. These deposits were produced by small alpine glaciers that were most abundant in the higher western parts of the quadrangle during the Pleistocene. They are probably Illinoian to Wisconsin in age

Ts — SANDSTONE, CONGLOMERATE, AND TUFF — Includes shale and lignitic coal; nonmarine; folded and faulted. In the Chicken area, rock types are dominantly tuffaceous sandstone, ferruginous sandstone, conglomeratic sandstone, shale and tuffaceous shale, and lignitic coal. Cobbles and boulders of a black glassy siliceous tuff that contains abundant plant fossils also occur. Where attitudes can be determined, the rocks are steeply dipping or vertical. In the vicinity of the mouths of Walker Fork and Napoleon Creek, a well-indurated conglomerate and breccia at the base is overlain by sandstone, shale, 1-inch-thick (3-cm-thick) lignitic coal beds, arkose, wackes, and laminated siltstone. In the vicinity of Baby Creek, coarse conglomerate is the dominant rock type with a few interbedded layers of sandstone and shale. Leaves of *Metasequoia glyptostroboides* Hu and Cheng and *Alnus evidens* (Hollick) Wolfe and poorly preserved palynomorphs, including the genera *Carya, Ulmus, Alnus, Acer, Abies, Juglans, Tilia, Tsuga, Larix*?, and *Ormosia*, suggest an early Tertiary age (Foster, 1969, p. G20) for the deposits near Chicken. Pollen from conglomerate and sandstone near Baby Creek indicates a late Tertiary age for these deposits. The cobbles and boulders of glassy tuff from the Chicken area are late Tertiary or early Pleistocene in age (Foster, 1969, p. G23). Thickness ranges from a few feet to several hundred feet (1m to more than 100m)

TKd — DETRITAL ROCKS — Conglomerate, sandstone, mudstone, shale, breccia and lignite, nonmarine. Folded and faulted. Basal part of the conglomerate near American Creek contains large (more than 2 ft (60 cm) in diameter) poorly rounded boulders of local origin, including serpentized ultramafic rock. However, most of the conglomerate consists of well-rounded clasts 1 to 5 inches (2 to 13 cm) in diameter in a quartzose matrix. Clasts are dominantly quartzite and chert, particularly black chert. Pollen and poorly preserved plant fragments and impressions in sandstone, mudstone, and shale indicate that the rocks may range in age from Late Cretaceous to Pliocene. In places these rocks apparently cover the trace of the Tintina fault, but in the vicinity of Barney and Placer Creeks they are crushed and brecciated along the postulated trace of the fault

SOUTH OF TINTINA FAULT

Igneous rocks

TMzs — MAFIC IGNEOUS ROCKS — Primarily basalt and gabbro but may include minor diabase and diorite. In the vicinity of Ketchumstuk Mountain, mixed with metabasalt and metagabbro. Columnar jointing in place. Many mafic dikes not shown on map

TMzd — DIORITE — Primarily diorite quartz diorite, and diorite porphyry but may include some granodiorite and gabbro. Commonly marginal facies of quartz monzonite and granodiorite plutons. Only large exposures indicated. Gray diorite and quartz diorite commonly occur in other igneous units

TMzg — UNDIFFERENTIATED GRANITIC ROCKS — Primarily quartz monzonite and granodiorite but includes granite to diorite with local aplite, alaskite, and pegmatite. Fine to coarse grained; equigranular to coarsely porphyritic. Biotite-hornblende quartz monzonite abundant. Commonly crops out in tors. Most of larger plutons probably Mesozoic in age, but unit probably includes Tertiary intrusive rocks. K-Ar age determination on granodiorite in the D-3 quadrangle about 5 miles (8 km) southeast of Arctic Dome gave 89 m.y. on hornblende and 92.8 m.y. on biotite (Don Turner, University of Alaska, oral comman., 1973)

Tb — BASALT — Dark greenish black but weathers rusty brown. Fine to coarse grained; local diabasic texture. Much fractured in places and commonly cut by calcite veinlets. Locally exhibits spheroidal weathering. Crops out primarily beneath terrace gravel along Mosquito Fork in the vicinity of Chicken and on benches along Stonehouse Creek

Ti — INTERMEDIATE VOLCANIC ROCKS — Lava, volcanic breccia, and tuff, mostly of andesitic composition. Tan, gray, or greenish gray. Altered and weathered

Tf — FELSIC IGNEOUS ROCKS — Felsic shallow intrusive rocks including porphyries, tuffs, welded tuffs, and volcanic breccia. Dikes and masses of felsic igneous rocks too small to map occur throughout the quadrangle. Rocks of this unit commonly much altered and weathered; white, gray, pink, light brown, or orange brown in color. Glassy rocks are dark gray or green

Tw — WELDED TUFF — Siliceous light-gray tuff that weathers tan or orange brown. Contains embayed quartz crystals and fresh brown biotite and rare fragments of quartzite and greenstone. Flow structure common. Locally more than 100 ft (30m) thick

Igneous and metamorphic rocks

Js — SYENITE OF MOUNT VETA — Primarily hornblende syenite porphyry but locally equigranular. Includes hornblende quartz monzonite and diorite. K-Ar age on hornblende of 177 m.y. ± 5 m.y. (Report No. 54 (Menlo Park), 1969, by J. C. Von Essen)

MzIs — HORNBLENDE GRANODIORITE — Primarily coarse-grained hornblende granodiorite and quartz monzonite but includes some gabbro and syenite

JTrg — GRANODIORITE OF TAYLOR MOUNTAIN — Medium- to coarse-grained granodiorite of Taylor Mountain batholith. Locally includes quartz monzonite, quartz diorite, diorite, and lamprophyre dikes. The eastern contact is indistinct and difficult to recognize in places because large amounts of country rock have been partly assimilated into the granodiorite. Dikes are abundant, and the country rock has been locally brecciated and contact metamorphosed to a hornfels. $^{87}Sr/^{86}Sr$ determinations on biotite from the granodiorite gave an age of 190 m.y. (Wasserburg and others, 1963, p. 258). Dotted area mostly diorite

Mzp — PYROXENITE AND HORNBLENDITE — Hornblendite, pyroxenit hornblendite, hornblende pyroxenite, and pyroxenite. Biotite locally abundant. Mostly ict serpentinized. K-Ar age determination on hornblendite from Joseph Creek gave 170.7 m.y. on hornblende and 180.9 m.y. on biotite (Don Turner, University of Alaska, oral comman., 1973), but other outcrops probably of several different ages

MzPzs — SERPENTINITE — Primarily lizardite and clinochrysotile in the Seventymile area and antigorite elsewhere; includes local areas of talc, magnesite, and rarely dolomite. Serpentine (derived from harzburgite and dunite) occurs mostly as small lenslike bodies

MzPzsp — SERPENTINIZED PERIDOTITE — Harzburgite and dunite, mostly 50 percent or more serpentinized. Composes large bodies near Mount Sorenson, America Creek, and Boundary and small masses scattered throughout the quadrangle. Primary minerals are dominantly olivine (Fo_{92-95}) with subordinate orthopyroxene (enstatite) and local clinopyroxene. Accessory chromite (less than 1 percent) found in the Mount Sorenson and American Creek bodies. Lizardite and clinochrysotile mixtures are the most common serpentines, although the American Creek and other bodies contain mostly antigorite

MzPzb — BASALT — Mostly altered fine-grained porphyritic basaltic rocks that are probably tholeiitic. Includes some diabase, mafic tuff, and breccia. Locally has a cataclastic texture and is metamorphosed to prehnite-pumpellyite facies

MzPzg — METAGABBRO — Dark greenish black; coarse to fine grained. Includes some metadiabase and metahornblendite. Principal primary minerals are hornblende and plagioclase; principal secondary minerals are chlorite, epidote, blue-green amphibole, albite, sphene, and rutile. Age unknown but most probably late Paleozoic or early Mesozoic

MzPzvi — SILICIFIED TUFF(?) — White, light-tan, or light-gray, massive, structureless, silica rock that is probably metamorphosed (silicified) tuff

Pzg — GREENSTONE — Dark-green mafic rocks of igneous origin, mostly massive but locally foliated. In places contain amygdules and pillows. Includes greenschist, minor green and pink quartzite, chert, phyllite, and small areas of serpentinized rocks; in the Ketchumstuk Creek area includes gabbro and basalt that is relatively unaltered

Metamorphic rocks, stratigraphic relations unknown

Pq — QUARTZITE AND ARGILLITE — Includes phyllite, metaconglomerate, chert, limestone and (or) marble, and graywacke and metagraywacke. Area with diagonal line overprint unmetamorphosed(?) or slightly metamorphosed; most of unlined area slightly metamorphosed but may be metamorphosed as high as lower greenschist facies. Brachiopods found in quartzite at two localities south of Seventymile River include the genera *Megoulia, Yakovlevia, Anemonaria, Spirifer(?)ella, Neospirifer, Tityrophora*?, *Waagenoconcha*?, *Thamnista*? *Choneteloidea*? (J. T. Dutro, written commun.,1972, 1974). Fossiliferous part is of Permian age and may correlate with the Tahkandit Limestone north of the Tintina fault in the Charley River quadrangle

Pzb — HORNFELS — Gneiss, schist, amphibolite, and phyllite altered to hornfels. Unit includes sheared andalusite-sillimanite hornfels, sheared andalusite-mica hornfels, cordierite-mica hornfels, calc-silicate hornfels, calcareous hornfels, and cordierite-potassium feldspar-mica hornfels. Rocks are dominantly metamorphosed to the hornblende-hornfels facies, but some are albite-epidote-hornfels facies and pyroxene-hornfels facies. Age uncertain but probably Paleozoic; metamorphosed in Paleozoic, Mesozoic, and (or) Tertiary time

Pzq — QUARTZ-MICA SCHIST AND GREENSCHIST — Also includes quartzite, marble, quartz phyllite, phyllite, and quartz-graphite schist, quartz-muscovite schist, chlorite schist, calcareous schist, and greenstone. Locally includes cataclastic rocks and hornfels. Includes retrograded gneissic rocks, particularly near granitic contacts. Biotite present locally but mostly not abundant. Garnet rarely present. Mostly greenschist facies but may locally include rocks of epidote-amphibolite or amphibolite facies. Poorly preserved crinoid columnals found in marble at several localities. Much of unit formerly mapped as undifferentiated rocks of Devonian age (Mertie, 1937). Age uncertain but probably mostly Paleozoic with metamorphism in Paleozoic and (or) Mesozoic time. Most of the unit crops south of the Tintina fault, but an outcrop of marble tentatively assigned to this unit is exposed north of the Tintina fault (T. 1 N., R. 30 E.)

Pzb — BIOTITE SCHIST, QUARTZITE, AND MARBLE — Also includes muscovite schist, quartz-epidote schist, quartz-graphite schist, quartz-amphibole schist, and some greenschist with interlayered greenstone. Locally includes quartz-biotite gneiss, retrograded gneiss, amphibolite, and hornfelsic gneiss and schist. Biotite abundant and garnet locally abundant. Probably mostly epidote-amphibolite facies but may include rocks of greenschist and amphibolite facies. Poorly preserved crinoid columnals found in marble at one locality. Probably mostly Paleozoic age with metamorphism in Paleozoic and (or) Mesozoic time

PzpCb — BIOTITE GNEISS AND AMPHIBOLITE — Also includes quartz-biotite gneiss and schist, quartzite, marble, and feldspathic gneiss. Rocks locally retrograded by thermal metamorphism and in places altered to hornfels. Abundant garnet; rare staurolite, andalusite, sillimanite, and kyanite. Poorly preserved crinoid columnals found in marble at one locality. Much of unit was formerly included in the Birch Creek Schist (Mertie, 1937). Age uncertain but probably mostly Paleozoic with metamorphic events in the Paleozoic and (or) Mesozoic; could include rocks and metamorphic events of Precambrian age

PzpCg — Augen gneiss — Cataclastic; sheared; includes mylonite gneiss, porphyroblastic augen gneiss, protomylonite gneiss, and blastomylonite

PzpCg — Gneiss and granitic rocks, intermixed — Areas where abundant granitic rocks of Mesozoic and (or) Tertiary age are intermixed with gneissic rocks. Outcrops are rare; mostly rubble

PzpCv — Gneiss and felsic rocks, intermixed — Areas that have abundant felsic hypabassal and volcanic rocks intermixed with metamorphic rocks and some granitic rubble. Felsic rocks are probably of Tertiary age

PzpCm — MYLONITE AND MYLONITE GNEISS — Primarily mylonite gneiss, protomylonite, and blastomylonite; includes augen gneiss and granitic gneiss. Mostly granitic in appearance. Epidote-amphibolite to amphibolite facies; mostly slightly retrograded. Age uncertain but probably Precambrian and (or) Paleozoic

NORTH OF TINTINA FAULT

Pc — SANDSTONE AND CONGLOMERATE — Sandstone and wacke composed of chert and quartz grains cemented by calcite. Interbedded conglomerate has variicolored chert pebbles and cobbles. Coal chips common. Contains productid brachiopods, plant fragments, bryozoans, corals, and gastropods. Interbedded shale nonfossiliferous. Thickness about 300 ft (90m). May be disconformably on Calico Bluff Formation

PPSc — CALICO BLUFF FORMATION (Upper Mississippian and Lower Pennsylvanian) — Limestone and shale, dark-brownish-gray, rythmically interbedded. Limestone is bioclastic. Formation contains rich invertebrate fauna and a few gymnosperm pollen grains and spores. Thickness about 1,400 ft (425m)

MDf — FORD LAKE SHALE (Upper Devonian to Upper Mississippian) — Shale and chert, grayish-black, laminated. Shale is siliceous. Minor dark-gray siltstone, quartzite, and limestone. Contains plant stems and a few brachiopods. Thickness about 3,000 ft (915m)

Dn — NATION RIVER FORMATION (Upper Devonian) — Mudstone, sandstone, gritstone, and conglomerate, rhythmically interbedded. Graded beds common. Mudstone is olive gray and contains plant fragments and spores of probable Late Devonian age. Olive-gray sandstone is chert-quartz arenite and wacke, commonly with carbonate cement. Gritstone and conglomerate composed mostly of varicolored chert granules and pebbles. Thickness about 3,000 ft (915m)

Dm — McCANN HILL CHERT (Lower, Middle, and Upper Devonian) — Chert, siliceous shale, and minor chert gritstone, thin-bedded and laminated, dark- to light-gray. Contains plant fragments, poorly preserved spores, and rare conodonts, gastropods, and cephalopods. Basal part of formation contains beds of dark-gray biohermal limestone with remarkably varied fauna including tabulates, corals, brachiopods, fish, and ostracodes of Middle Devonian (Eifelian) age. Thickness 200 to 800 ft (60 to 245m). Lies disconformably on Road River Formation

DOr — ROAD RIVER FORMATION (Lower Ordovician to Lower Devonian) — Dark-gray graptolitic shale with lesser amounts of grayish-black laminated chert and very minor dark-gray limestone, greenish-gray dolomite, grayish-black chert arenite and chert conglomerate. Chert, chert arenite, and chert conglomerate occur mainly in basal part of formation. Graptolites indicate that all Ordovician and Silurian series are represented and that the youngest rocks are Early Devonian. Lies disconformably on Hillard Limestone. Thickness ranges from 400 to 900 ft (122 to 275m)

OCh — HILLARD LIMESTONE (Lower Cambrian to Lower Ordovician) — Very fine to medium-grained pale-yellowish-brown limestone; laminated to very thick bedded; shaly to massive parting. Has interbeds of edgewise limestone conglomerate and oolitic and sandy limestone. Minor dolomite, grayish-black chert, dark-gray flasile shale, siltstone, and at base, limestone-boulder conglomerate. Medium-grained sandy (chert and quartz) limestone commonly contains trilobites and brachiopods. Age, Early, Middle, and Late Cambrian and (in one locality) includes earliest Ordovician. Maximum thickness 400 ft (122m)

Ca — ADAMS ARGILLITE (Lower Cambrian) — Light-olive-gray argillite, siltstone, and crosslaminated quartzite with worm(?) burrows. Oolitic and sandy limestone near base contains *Archeocyathids* of Early Cambrian age. Thickness about 900 ft (275m)

€f — FUNNEL CREEK LIMESTONE (Lower Cambrian) — Light-gray, fine- to medium-grained laminated limestone, dolomitic limestone, and dolomite. Extensively silicified and commonly oolitic. Forms massive cliffs. Nonfossiliferous. Maximum thickness about 1,000 ft (305m)

Yfl — TINDIR GROUP (Precambrian Y) — Includes:

Limestone — Laminated dark-gray limestone with slabby and platy parting. Contains interbeds of greenish-gray shale, siltstone, and sandstone. Includes minor pale-yellowish-brown sandy limestone, light-gray laminated dolomite, and chert-carbonate gritstone. Thickness ranges from 800 to 1,500 ft (244 to 457 m)

Yls — Dolomitic sandstone and shale — Sandstone (dolosarenite), light-gray, thin- to medium-bedded, and olive-gray shale. Dolosarenite contains subordinate chert and quartz grains, and crosslaminations are common. Weathers very pale orange and resembles crystalline dolomite at a distance. Minor gritstone and conglomerate are composed mostly of dolomite and chert clasts and some granules, pebbles, and cobbles of granitic, volcanic and metamorphic rocks. Thickness about 2,500 ft (762 m)

Yfb — Basalt and red beds — Dark-greenish-gray basalt and tuff and red beds consisting of grayish-red shale and siliceous shale. Minor greenish-gray shale, jasper, greenstone-dolomite conglomerate, hematitic dolosarenite, and vitric tuff and lava, largely replaced by hematite and carbonate. Thickness at least 2,500 ft (762m)

Stratigraphic position uncertain

pCq — QUARTZITE AND ARGILLITE — Greenish-gray laminated quartzite with interbeds of greenish-gray and dark-gray argillite. Minor grayish-red argillite, siliceous shale, chert, and dark-gray sandy limestone. Quartzite contains a few worm(?) tubes. Includes small areas of "intrusive(?) greenstone. Probably equivalent to upper part of Tindir Group or possibly to the Adams Argillite. Thickness at least 1,000 ft (305m)

pCg — GREENSTONE — Probably altered fine-grained andesitic or basaltic rocks interlayered with tuff, volcanic conglomerate, laminated quartzite, argillite, siliceous shale, and chert. Includes coarse-grained greenstone that may be altered mafic intrusive rock. Probably equivalent to basalt and red beds of Tindir Group

pCb — LIMESTONE ALONG TINTINA FAULT ZONE — Dark-gray medium-grained limestone interbedded with dark-gray shale, argillite, siliceous shale, chert, calcareous siltstone, dolomite, tuff, and greenstone. Thickness at least 1,000 ft (305m)

Contact. Includes contacts that are well located, approximately located, and inferred. Gradational contacts and some inferred contacts shown by color boundaries only

Fault. Dotted where concealed. Includes known faults, probable faults, and selected lineaments observed on aerial photographs. Many suspected faults not shown

Pingo

Bicarbonate spring

Tectonic breccia, mostly found in rubble

Cataclastic rocks

Occurrence of glaucophane

Disseminated sulfides

B Locality where fossil brachiopods were found (shown only south of Tintina fault)

Chert occurrence

Marble outcrop

K Kyanite occurrence

Dolomite outcrop

Note—Commonly used geologic symbols are printed on the map jacket; a separately printed list is available on request from the U.S. Geological Survey

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SOURCES OF DATA FOR MAP COMPILATION

Published sources

Geology adapted from published maps by:

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Clark, S. H. B., and Foster, H. L., 1969, Preliminary geologic map of the Eagle D-2, D-3 quadrangles, Alaska: U.S. Geol. Survey open-file report.

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———1972, Preliminary geologic map of the Eagle quadrangle, Alaska: U.S. Geol. Survey Misc. Field Studies Map MF-358.

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Unpublished sources

Geologic mapping by:

Helen L. Foster, 1963-64, 1966, 1968, 1971-73; assisted by Beverly Masters Sullivan, 1963; Terry E. C. Keith, 1964 and 1966; Sharleen MacDonald, 1968; Ronald M. Warbelow, 1968-69; Jo Laird, 1969; Martha E. Yount, 1970-71; Diana Grunig, 1971; Barbara Purdy, 1972; and Nancy Crozer, 1973.

Henry R. Schmoll with John Trach, 1964 (particularly surficial geology in A-4, B-4, and A-5 quadrangles).

Florence R. Weber, 1969, 1970, and 1971, and interpretation of glacial geology from serial photographs, especially in the C-4 and D-4 quadrangles.

Sandra H. B. Clark, 1968, assisted by Kathy Nichols.

Terry E. C. Keith, 1970.

Jo Laird, 1970.

Earl E. Brabb and Michael Churkin, Jr., in the D-1 quadrangle, 1960-63; assisted by R. N. Passero and H. J. Roepke, 1960, J. C. Melik and R. L. Taylor, 1961, A. Aadland, 1962, and D. L. Giles and R. R. Rohrbacker, 1963.

Earl E. Brabb with Tor H. Nilsen, 1973 (D-1 quadrangle).

For sale by Alaska Distribution Section, U.S. Geological Survey, 310 First Avenue, Fairbanks, AK 99701 and Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225, price $1.25