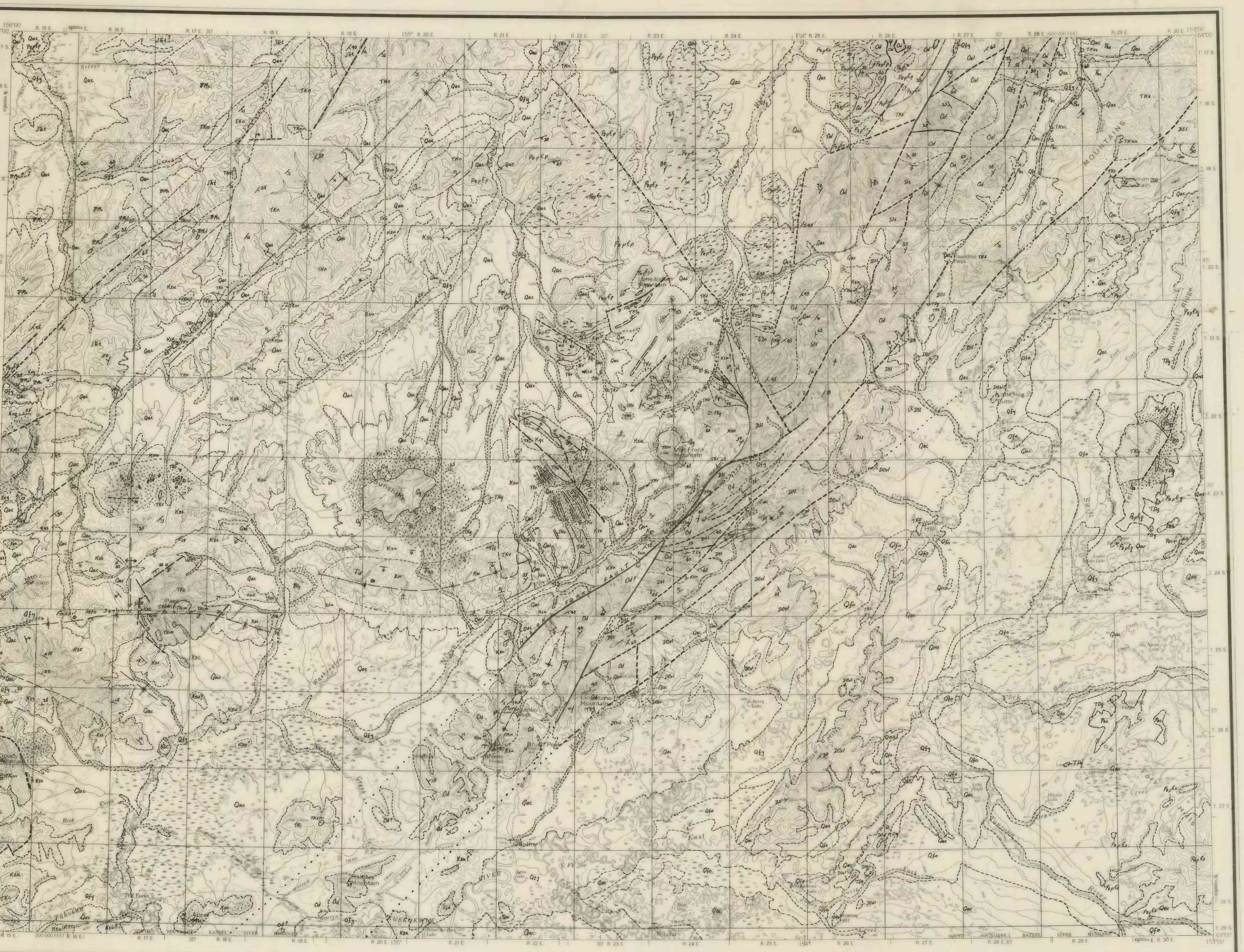
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT 80-811 A



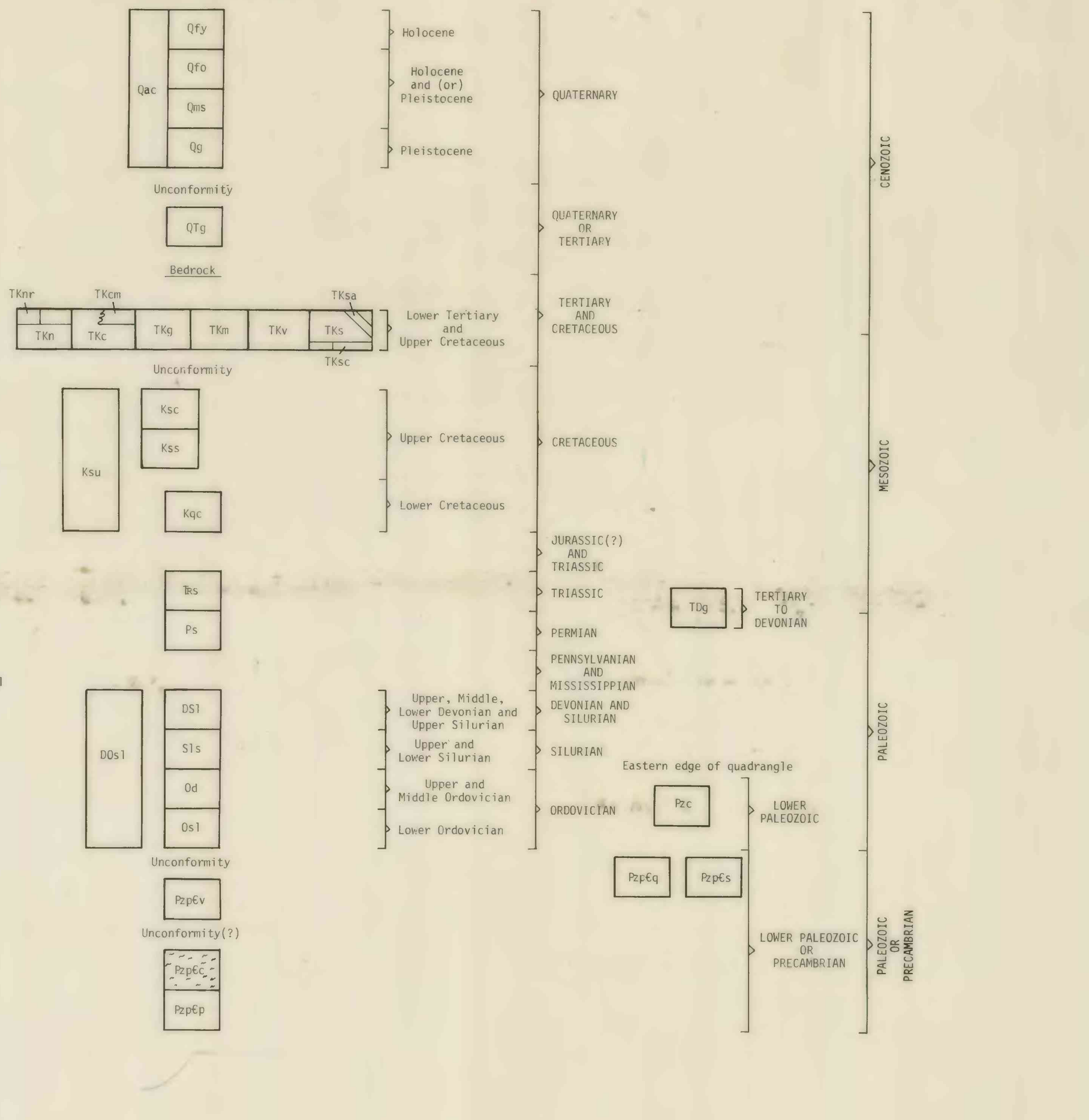
Base from U.S. Geological Survey 1:250,000
Alaska topographic series: Medfra, 1959.

SCALE 1:250000

CONTOUR INTERVAL 200 FEET
DOTTED LINES REPRESENT 100 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL
1959 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 23°00' TO 24°30' EAST

Field mapping by W. W. Patton, Jr., 1975-1979; E. J. Moll, 1978-1979; J. T. Dutro, Jr., 1975-1979. M. L. Silberman, 1977-1979; R. M. Chapman, 1975-1976; M. L. Throckmorton, 1977; C. L. Connor, 1978; and J. L. Bentz, 1979. Map compiled by W. W. Patton, Jr., and E. J. Moll, 1979-1980.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Unconsolidated Deposits

Qac UNDIFFERENTIATED ALLUVIAL, COLLUVIAL, AND EOLIAN TERRACE AND SLOPE DEPOSITS--Chiefly silt and very fine sand. Includes extensive deposits of loess on terraces and hillslopes bordering the Kuskokwim River and its tributaries; loess deposits locally extend to as much as 200 m above river level

Qfy YOUNTER FLOOD-PLAIN DEPOSITS--Silt, sand, and gravel. Chiefly silt and sand along broad meandering rivers such as Kuskokwim, North Fork, Nixon Fork, Nowitna, and Sulukna; gravel where rivers impinge against bedrock uplands. Gravel abundant along small streams that drain bedrock uplands and along braided course of Tonzona River. Deposits characterized physiographically by bars, oxbow lakes, meander scrolls, abandoned channels, and other evidence of recent flood-plain building

Qfo OLDER FLOOD-PLAIN DEPOSITS--Largely silt and sand but probably includes abundant gravel along Tonzona River. Deposits at or near river level but youthful flood-plain features such as oxbow lakes, meander scrolls, and abandoned channels are much modified. Contact with younger flood-plain deposits (Qfy) locally gradational and poorly defined

Qms MODIFIED EOLIAN SAND DEPOSITS--Sheetlike dune fields of tan fine- to medium-grained eolian sand, locally overlain by peat and loess. Linear and parabolic dunes with a strong SW orientation are recognizable in aerial photographs. Deposits stabilized by a thick cover of vegetation and locally dissected by stream erosion. Similar dune fields in contiguous parts of McGrath and Mt. McKinley quadrangles are reported to be as much as 30 m thick (Fernald, 1960; Reed, 1961). Dunes probably originated during Pleistocene glaciation of Alaska Range (Fernald, 1960)

Qg GLACIAL DRIFT--Unsorted bouldery till and isolated moraines. Deposited by small valley glaciers in Sunshine and Mystery Mountains and on Von Frank Mountain

QTg GRAVEL DEPOSITS ON JONES CREEK--About 25 m of moderately dipping gravel exposed in a small cutbank on Jones Creek near Nixon Fork fault. Poorly sorted pebble-cobble gravel composed chiefly of volcanic and hypabyssal rocks. Interbedded semiconsolidated sand and mudstone. Fossil wood and carbonaceous layers. Probably late Tertiary or Quaternary in age

Bedrock

TKn VOLCANIC ROCKS OF THE NOWITNA RIVER AREA--Chiefly subaerial flows of trachyandesite, basaltic andesite, and basalt. Subordinate intercalated flows and tuffs of rhyolite and dacite. Flows 15 to 30 m thick with vesicular tops; commonly columnar jointed. Flows composed of phenocrysts of plagioclase and pyroxene in a fine groundmass of plagioclase microlites, granular pyroxene, and dark glass. Unit estimated to be at least 1,500 m thick. Assigned a latest Cretaceous and earliest Tertiary age based on potassium-argon age determinations of 63 and 64 m.y.

TKnr Altered flow-banded rhyolite domes and associated rhyolitic tuffs and breccia. Domes and associated pyroclastic rocks characterized by sparse phenocrysts of rounded quartz and altered feldspar in a white, tan, or pinkish chalky groundmass

TKc MAFIC TO INTERMEDIATE VOLCANO-PLUTONIC COMPLEXES--Altered basalt, andesite, and trachyandesite porphyry flows and hypabyssal intrusive bodies. Altered mafic and intermediate crystal and lithic tuffs. Subordinate olivine basalt and dacite flows. Flows and hypabyssal rocks composed of plagioclase and clinopyroxene phenocrysts in a groundmass of fine-grained plagioclase laths, granular pyroxene, and dark glass. Assigned a latest Cretaceous and earliest Tertiary age based on seven potassium-argon mineral and whole-rock age determinations ranging from 65-71 m.y.

TKcm Small bodies of monzonite, quartz monzonite, and granodiorite. Chiefly monzonite in complexes at Cloudy Mtn. and Alone benchmark

TKg GRANITE--White to light-gray, fine- to coarse-grained biotite granite (IUGS classification, Streikeisen, 1973). Pluton at Sunshine Mtn. is equigranular homogeneous B type granite (plagioclase = 1/3 to 2/3 of feldspars). Pluton on West Fork poorly exposed but appears to be chiefly a coarsely porphyritic B type granite. Telida Mountains pluton is a coarse-grained equigranular A type granite (plagioclase = <1/3 of feldspars). Small, generally fine-grained plutons in upper Sulukna River drainage include both A and B type granite, granodiorite, and quartz monzonite. Assigned a latest Cretaceous and earliest Tertiary age based on five potassium-argon biotite mineral-separate ages ranging from 63 to 71 m.y.

TKm MONZONITE--Includes monzonite, quartz monzonite, quartz monzodiorite, and monzodiorite (IUGS classification, Streikeisen, 1973). Subordinate monzogabbro and gabbro at Stone Mtn. and Von Frank Mtn. Unit characterized by a medium- to coarse-grained medium-gray equigranular plutonic rock composed of 25 to 40 percent mafic minerals and 60 to 75 percent feldspar. In Cripple Creek Mountains pluton is composed chiefly of monzonite; at Von Frank Mountain pluton is zoned with a small central core of light quartz monzonite surrounded by a broad rim of dark monzonite. The large pluton 15 km north of Medfra is composed of quartz monzonite and the two long narrow bodies at the southwest end of Whirlwind Ridge are made up of monzodiorite and quartz monzodiorite. Unit assigned a latest Cretaceous and earliest Tertiary age based on five potassium-argon ages from biotite mineral-separates ranging from 66 to 70 m.y.

TKv VOLCANIC ROCKS OF NIXON FORK-UPPER SULUKNA RIVER AREA--Sills, dikes, flows, and plugs of rhyolite, dacite, and trachyandesite occurring in a broad belt that extends northwestward across the central part of the quadrangle from Jumbo Peak, south of the Nixon Fork, to the Sulukna River. The rhyolite is characterized by phenocrysts of quartz, plagioclase, biotite, and rare sanidine in a fine-grained quartzo-feldspathic groundmass. The dacite consists of phenocrysts of plagioclase, hornblende, and biotite in a fine-grained quartzo-feldspathic groundmass. The trachyandesite is composed of phenocrysts of plagioclase and altered mafic minerals in a groundmass of subparallel plagioclase laths. At Mystery Mountains the unit consists chiefly of northwest-trending sills and small plugs of highly altered rhyolite, dacite, and trachyandesite which commonly contain secondary sericite, calcite, chlorite, tourmaline, and muscovite of hydrothermal origin. West of Cottonwood Creek the unit is represented by a broad nearly flat-lying flow of altered vesicular trachyandesite, and on the upper Sulukna River drainage the unit is composed of small plugs and domes of rhyolite and dacite. Unit unconformably overlies and intrudes sedimentary rocks of Cretaceous age. Assigned a latest Cretaceous and earliest Tertiary age based on four potassium-argon biotite mineral-separate ages of 62 to 67 m.y.

TKs VOLCANIC ROCKS OF THE SISCHU MOUNTAINS--Light-gray to purplish-red banded rhyolite and dacite subaerial flows and domes locally containing interlayered breccia and tuffs. Rocks are composed of quartz, altered plagioclase, sanidine, biotite, and magnetite phenocrysts in a fine-grained groundmass of quartz, partly altered feldspar, and clay. Exposures are confined to scattered patches of frost-riven rubble on ridgetops. Unit has an estimated minimum thickness of 500 m but probably is much thicker. Assigned a latest Cretaceous and earliest Tertiary age based on two whole-rock and one sanidine mineral-separate potassium-argon ages ranging from 66 to 71 m.y.

TKsc Conglomerate, sandstone, and lignite exposed in 25-m-thick section in cutbanks along Sethkokna River. Conglomerate contains clasts of quartz, chert, felsic volcanic rocks, and talcy schist. Overlain by rhyolite and dacite flows. Assigned a latest Cretaceous (Campanian-Maestrichtian) age based on pollen from lignite beds (Tschudy and Bradbury, written commun., 1977)

TKsa Dike-like body of dark-brown to gray andesite porphyry 4 km north of Dyckman Mtn.

TDg UNDIFFERENTIATED GABBRO--Sills, dikes, and small plugs of gabbro intruding rocks of early Paleozoic and (?)Precambrian age in East Fork and Slow Fork Hills, Telida Mountains, and Munsatli Ridge. A few small bodies are found in the belt of early Paleozoic carbonate rocks (DSl, Sls, Od, and Osl) which extends from Halfway Mountain northeasterly to the Sethkokna River and small bodies of gabbro and ultramafic rocks also occur along the Nixon Fork fault on Whirlwind Creek. All of the gabbro bodies are altered and in the Telida Mountains are contact metamorphosed where intruded by granite (TKg). Unit cannot be dated more closely than Tertiary to Devonian

Ksu UNDIFFERENTIATED SHALE, SILTSTONE, AND SANDSTONE--Chiefly dark-gray carbonaceous, largely nonfossiliferous shale, siltstone, and very fine grained sandstone. Poorly exposed except where altered to a black slaty argillite hornfels in the vicinity of plutonic and hypabyssal intrusive rocks. Locally includes medium- to coarse-grained sandstones and conglomerates which may correlate with the sandstone and conglomerate unit (Ksc), the fine sandstone, siltstone, and shale unit (Kss), or the quartz-carbonate sandstone and pebbly mudstone unit (Kqc). Assigned an Early and Late Cretaceous age. Unit tentatively includes a massive limestone conglomerate of uncertain age and stratigraphic affinities. The conglomerate, which crops out between White Mtn. and Shepherd Creeks in the upper Sulukna River drainage, is composed of pebble-to-cobble-size clasts of Paleozoic limestone. It overlies the reefy limestone and dolomite unit (DSl) and may be as old as Permian

Ksc SANDSTONE AND CONGLOMERATE--Chiefly fine- to coarse-grained, greenish-gray to gray, thinly cross-bedded "salt and pepper" sandstone and quartz-chert pebble conglomerate. Poorly exposed interbeds of dark shale and siltstone. Sandstone composed of approximately 45 percent quartz and chert clasts, 25 to 45 percent metamorphic rock fragments, 15 percent sedimentary rock fragments, and less than 10 percent argillaceous matrix. Conglomerate composed of well-rounded white quartz and black and gray chert pebbles in a greenish, fine- to coarse-grained, friable "salt and pepper" sandstone matrix. Locally abundant plant fossils and fresh and brackish-water mollusks. Unit probably represents a prograding delta which grades upward from nearshore marine deposits of the underlying fine sandstone, siltstone, and shale unit (Kss) into subaerial strandline, lagoonal, and coastal-plain deposits. At Mystery Mountains unit appears to overlie unconformably the Lower Cretaceous quartz-carbonate sandstone and pebbly mudstone (Kqc) and Triassic spiculite and sandy limestone (Ŧs). Unit estimated to be at least 2,200 m thick in the Fossil Mtn. syncline (Patton and others, 1977). Unit assigned a Late Cretaceous age based on its stratigraphic position above the early Late Cretaceous fine sandstone, siltstone, and shale unit (Kss) and below the latest Cretaceous and earliest Tertiary mafic to intermediate volcano-plutonic complexes (TKm)

Kss FINE SANDSTONE, SILTSTONE, AND SHALE--Fine- to medium-grained, dark-greenish-gray, thinly cross-bedded, fossiliferous sandstone and poorly exposed dark-gray siltstone and shale. Sandstone clasts composed of approximately 40 to 45 percent quartz, 45 to 50 percent lithic fragments, chiefly volcanic and sedimentary, and 5 to 15 percent feldspar, chiefly plagioclase. Clasts set in a finely divided, commonly calcareous, argillaceous matrix. Calcareous ironstone nodules abundant. Unit probably represents a nearshore marine depositional environment. Estimated to be approximately 1,200 m thick along south flank of Fossil Mtn. syncline (Patton and others, 1977). Elsewhere poorly exposed except where altered to hornfels. Assigned an early Late Cretaceous (Cenomanian) age based on widespread occurrence of *Inoceramus* including *I. concentricus* and *I.* cf. *I. pictus* (D. L. Jones, written communs., 1976, 1978)

Kqc QUARTZ-CARBONATE SANDSTONE AND PEBBLY MUDSTONE--Fine- to coarse-grained quartz-carbonate sandstone and conglomerate, quartzose limestone and dark-gray pebbly mudstone and siltstone. Sandstone and conglomerate composed chiefly of quartz, detrital carbonate, and quartz mica schist debris. Unit identified only in the upper Sulukna River, Meadow Creek, and upper Nixon Fork drainages. The most complete section, approximately 320 m thick, is exposed on ridges southeast of Shepherd Creek in the upper Sulukna River drainage. From bottom to top this section consists of: 20 m of quartzose limestone, grit, and coquinoidal limestone with *Buchia sublaevis*, *B. crassicolis*, and *Cylindroteuthis* of Early Cretaceous (Valanginian) age (D. L. Jones, written commun., 1976); 90 m of quartz-carbonate sandstone and conglomerate, quartzose limestone, and dark siltstone with abundant *Inoceramus*, *I.* prisms, and *Acroteuthis* of Early Cretaceous (Hauterivian and Barremian) age (D. L. Jones, written commun., 1976); and 210 m of dark mudstone with sparse well-rounded pebbles and granules of chert, and containing rare cephalopods including *Tropaeum* of Early Cretaceous (Aptian) age (D. L. Jones and J. W. Miller, written commun., 1979)

Kvg VOLCANIC GRAYWACKE AND CONGLOMERATE--Poorly sorted fine- to coarse-grained graywacke, sandstone, grit, and pebble to cobble conglomerate composed chiefly of volcanic rock and chert detritus; interbedded dark mudstone. Locally abundant fragments of large *Inoceramus*, brachiopods, and worm tubes. Unit confined to area northwest of Susulatna River (Patton, 1978). Thickness unknown. Assigned an earliest Cretaceous age based on the widespread occurrence of large *Inoceramus* prisms similar to those found in quartz-carbonate sandstone and pebbly mudstone unit (Kqc)

JŦt CHERTY TUFF, CRYSTAL AND LITHIC TUFFS, AND VOLCANIC BRECCIA--Dark-greenish, very fine grained cherty tuff grading into greenish-gray radiolarian chert. Fine- to coarse-grained dark-greenish-gray crystal and lithic tuffs. Volcanic breccia and conglomerate composed of poorly sorted clasts of mafic volcanic rocks and cherty tuff in a crystal and lithic tuff matrix. Unit locally includes small gabbro and diabase intrusive bodies. Exposures of unit limited to scattered cutbanks and patches of frost-riven rubble on ridgetops. Unit confined to area northwest of Susulatna River (Patton, 1978). Thickness unknown. Assigned a Triassic and possible Early Jurassic age based on radiolaria and conodonts that are widespread in the cherty beds (D. L. Jones, B. K. Holdsworth, E. A. Pessagno, Jr., and J. Repetski, written communs., 1977-1980)

Ŧs SPICULITE AND SANDY LIMESTONE--Dark-gray banded spiculite and chert, yellowish-orange-weathering sandy fossiliferous limestone and conglomerate and dark-gray shale. Limestone and conglomerate are composed of detrital carbonate, quartz and chert clasts, and calcareous fossil debris. Spiculite consists of chert, fine quartz grains, and as much as 60 percent sponge spicules. Unit identified only in upper Sulukna River and Meadow Creek drainages. The most complete section, approximately 150 m thick, is exposed on ridges southeast of Shepherd Creek in the upper Sulukna River drainage (Patton and others, 1977). From bottom to top the section consists of: 60 m of sandy limestone, conglomerate, and siltstone with locally abundant *Monotis ochotica*, *M.* of *M. scutiformis*, *Halobia* sp. and *Heterastridium* sp. of Late Triassic (Norian) age (N. J. Silberling, written commun., 1976), and 90 m of dark-gray spiculite and chert with radiolaria of Triassic age (E. A. Pessagno, Jr., written commun., 1977; D. L. Jones, written commun., 1978)

Ps SANDSTONE, SANDY LIMESTONE, AND CONGLOMERATE--Fine- to coarse-grained yellowish-orange-weathering sandstone, limy sandstone, siltstone, and conglomerate. Sandstone ranges from a clean quartz arenite to a lithic arenite with as much as 25 percent muscovite and metamorphic rock fragments. Where unit unconformably overlies calc-schist (PzpЄc) and pelitic schist (PzpЄp), it contains a basal conglomerate with large clasts of calc schist, quartz-mica schist, and chlorite schist in a fossiliferous, micaceous, sandy matrix (Patton and Dutro, 1979). Yellowish-orange-weathering fossiliferous limestone and limy siltstone with abundant brachiopods including *Kuvelousia*, *Spiriferella*, and *Waagenoconcha* of Permian age. Unit identified only in upper Sulukna River and Meadow Creek drainages. Estimated to be approximately 60 m thick in upper Sulukna River drainage (Patton and others, 1977)

ℙMc CHERT AND LIMESTONE--Chiefly greenish-gray, dark-gray to black, and red radiolarian chert in beds 5 to 25 cm thick. Exposures of unit limited to small cutbanks and rubble-covered ridgetops. Thickness unknown. Assigned a Pennsylvanian and Mississippian age based on radiolaria (D. L. Jones and B. K. Holdsworth, written communs., 1978-1980). Unit confined to area northwest of Susulatna River (Patton, 1978)

ℙMcl Lenticular beds of fossiliferous limestone as much as 25 m thick with subordinate beds of sandy limestone, chert, grit, and arkosic sandstone. Assigned a Mississippian age based on conodonts (J. Repetski, written commun., 1979) and foraminifera (A. Armstrong, oral commun., 1979)

DOsl SHALY LIMESTONE--Dark-gray and grayish-orange finely laminated limestone and dolomitic limestone. Characterized by thin, dark-gray, calcareous bands interlayered with broader grayish-orange dolomitic bands. Small-scale cross-bedding and penecontemporaneous slump structures common. Subordinate laminated dolomite, dark chert, and siliceous siltstone. Unit locally sheared and foliated. Poorly exposed; thickness unknown. Sparse conodont fauna indicates a range in age from Ordovician to Middle Devonian (J. Repetski, written communs., 1977-1979). Unit interpreted as a deep-water facies of the early Paleozoic shallow-water shelf carbonate assemblage (Osl, Od, and DSl), which lies in fault contact to the northwest

DSl REEFY LIMESTONE AND DOLOMITE--Unit composed of a lower sequence of dolomite containing ostracodes of probable Late Silurian age (J. M. Berdan, written commun., 1979), a middle sequence of mixed limestone and dolomite with favositid reefs and shelly fossils of probable Early Devonian (Siegenian-Emsian) age, and an upper sequence composed of *Amphipora*-bearing dolomite and rugose coral-bearing limestone. *Smithiphyllum* of probable early Late Devonian (Frasnian) age (W. A. Oliver, Jr., written commun., 1977) occurs near the top of the unit. Unit poorly exposed except along ridge between Whirlwind and Soda Creeks where it is estimated to be 1,000 to 1,500 m thick

Sls THIN-BEDDED LIMESTONE AND SHALE--Dark-gray to black platy limestone and limy shale containing graptolites of Silurian (latest Llandoverian to early Wenlockian) age (C. Carter, written commun., 1978). Occurs along a narrow belt that extends from upper Paradise Fork to White Mountain Creek; appears to be missing southwest of Hardscrabble Creek. Unit poorly exposed except along divide between Paradise Fork and Browns Fork where it is estimated to be at least 1,000 m thick

Od MASSIVE DOLOMITE AND LIMESTONE--Light-brown to dark-gray massive dolomite and limestone cyclically interbedded with shallow-water yellowish-orange-weathering algal and lime mudstone. Gastropods common throughout; corals, brachiopods, ostracodes, and conodonts locally abundant. Ranges in age from Middle (White Rockian) to Late (Maysvillian) Ordovician (J. Repetski and W. A. Oliver, Jr., written communs., 1977-1980). From 2,000 to 2,500 m of unit exposed in nearly continuous section along ridge between Paradise Fork and Telsitna River. Elsewhere limestone members are extensively sheared and dolomitized

Osl SILTY LIMESTONE AND SILTSTONE--Chiefly yellowish-orange-weathering, thin-bedded, shallow-water, silty limestone and limy siltstone. Characterized by 5- to 30-m-thick cycles which grade upward from massive limestone at the base through thin-bedded silty limestone and into siltstone and shale at the top. Rare poorly preserved trilobites, gastropods, and cephalopods. Sparse conodont fauna indicates entire sequence is Early Ordovician (J. Repetski, written communs., 1977-1980). Approximately 900 m of unit in well-exposed section at Novi Mountain and on ridge between Paradise Fork and Telsitna River. Elsewhere unit poorly exposed but generally distinguishable by its characteristic bright yellowish-orange weathering

Pzc CHERT AND PHYLLITE--Banded light-gray to black sooty impure radiolarian chert, green talcy phyllite and slate, thin-bedded shaly limestone, and calcareous quartzite. Exposed in a few scattered cutbanks along Sethkokna River and Highpower Creek and at Grayling Hill. Assigned an early Paleozoic age based on correlation with a similar lithologic sequence at Lake Minchumina (Mt. McKinley quadrangle) which contains graptolites and radiolaria of early Paleozoic age (C. Carter and D. L. Jones, written communs., 1979)

PzpЄq QUARTZITE, GRIT, AND ARGILLITE--Fine- to coarse-grained quartzite, quartz grit, quartz-feldspar grit, and argillite grading upward into very fine grained quartzite, argillite, calcareous argillite, phyllite, and chert. Poorly exposed except in Telida Mountains where contact metamorphosed to hard quartzite and grit and finely laminated quartz-diopside, quartz-tourmaline, quartz-biotite-muscovite, quartz-plagioclase-epidote-actinolite, and cordierite-andalusite hornfels. Sheared and slightly schistose at Munsatli Ridge. Assigned an early Paleozoic or Precambrian age based on probable correlation with quartzite, metasiltstone, slate, and grit unit of Kantishna River quadrangle (Chapman and others, 1975), lower part of Nilkoka Group in Fairbanks quadrangle (Péwé and others, 1966), and grit, quartzite, slate, argillite, and chert unit in Livengood quadrangle (Chapman and others, 1971)

PzpЄs SHEARED GRIT, QUARTZITE, AND QUARTZ-MICA SCHIST--Sheared and foliated quartz and quartz-feldspar grits and quartzite intercalated with quartz-muscovite-chlorite and quartz-muscovite-biotite schists. Subordinate phyllite, thin limestone, and metachert. Grits characterized by sheared porphyroclasts of quartz, twinned plagioclase, and microcline. All rocks metamorphosed to greenschist facies. Unit confined to Slow Fork Hills in southeastern part of quadrangle. Interpreted to be a metamorphosed equivalent of quartzite, grit, and argillite unit (PzpЄq) and assigned an early Paleozoic or Precambrian age. Potassium-argon age of 276 m.y. obtained from a muscovite mineral-separate from schist in Medfra quadrangle and an age of 421 m.y. from a hornblende mineral-separate from a mafic rock intruding(?) this unit in southwestern part of Mt. McKinley quadrangle

PzpЄv METAVOLCANIC ROCKS--Tan, light-gray, pink, and green banded fine-grained felsic volcanic rocks with well-developed foliation. Chiefly porphyry composed of large phenocrysts of embayed quartz and plagioclase in a very fine grained quartzo-feldspathic groundmass that has a distinct micaceous overprint. Subordinate fine-grained quartzo-feldspathic rocks which probably represent recrystallized felsic flows and tuffs. Unit identified only at Lone Indian Mtn. and along ridges west of Telsitna River. Tentatively assigned an early Paleozoic or Precambrian age

PzpЄc CALC-SCHIST--Light- to medium-gray calc-schist and thin-bedded schistose impure marble. White to light-gray, fine-grained massive sandy marble. Subordinate quartz-mica schist. Unit distinguished from pelitic schist (PzpЄp) in covered areas by aeromagnetic data which show relatively smooth profiles over this unit in contrast to rugged, steep-gradient profiles over the pelitic schist. Unit appears to grade downward into pelitic schist (PzpЄp). Assigned an early Paleozoic or Precambrian age

PzpЄp PELITIC SCHIST--Chiefly pelitic and quartzose metasedimentary rocks of greenschist facies. Light-gray micaceous quartzite and greenish quartz-chlorite-muscovite schist grading into dark-gray quartz-muscovite-biotite-garnet schist. Subordinate calc schist and marble. Locally includes greenstone and greenschist metamorphic igneous rocks composed of chlorite, epidote, actinolite, and plagioclase. Includes a small body of pink granitic gneiss 2 km west of Our Creek benchmark. Unit very poorly exposed. Assigned an early Paleozoic or Precambrian age based on potassium-argon ages of mica mineral-separates ranging from 274 to 514 m.y. (Silberman and others, 1979) and on stratigraphic evidence which suggests a pre-Ordovician age (Patton and Dutro, 1979). Mica mineral-separates from this unit in nearby parts of the Ruby quadrangle have yielded potassium-argon ages as old as 921 m.y. (Silberman and others, 1979)

Zone of hornfels

Contact - Dashed where approximately located; short dashed where inferred; dotted where concealed

Fault - Dashed where approximately located; short dashed where inferred, dotted where concealed. U, upthrown side; D, downthrown side

Prominent aeromagnetic lineament

Anticline - Showing direction of plunge

Syncline - Showing direction of plunge

Strike and dip of beds. May include overturned beds

Strike of vertical beds

Horizontal beds

Strike and dip of beds based on photo-interpretation or distant observation

Strike and dip of foliation

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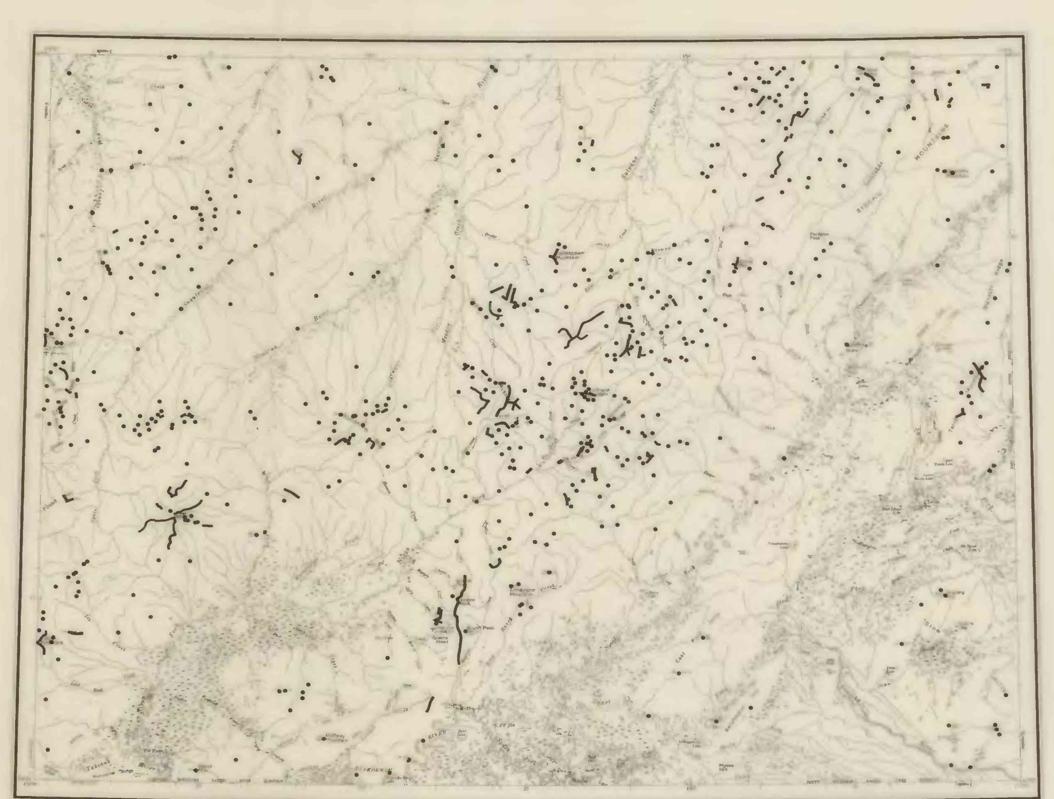
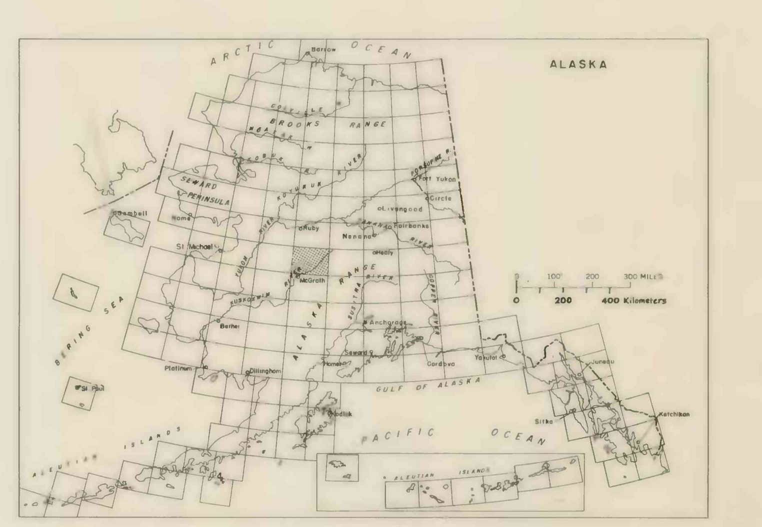


MAP OF THE MEDFRA QUADRANGLE SHOWING LOCATION OF FIELD OBSERVATION POINTS (DOTS) AND CONTINUOUS FOOT TRAVERSES (LINES)

Geology extended between field stations by aerial reconnaissance and by interpretation of aerial photographs. Surficial deposits mapped almost entirely from aerial photographs.



INDEX MAP SHOWING LOCATION OF MEDFRA QUADRANGLE, ALASKA

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

PRELIMINARY GEOLOGIC MAP OF THE MEDFRA QUADRANGLE, ALASKA

by

W. W. Patton, Jr., E. J. Moll, J. T. Dutro, Jr., M. L. Silberman and R. M. Chapman

1980