DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF – 676

EXPLANATION

CORRELATION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Qa, Qsu, Qaf		Holocene	QUATERNARY
Qc		Holocene and Pleistocene	
Qag			
Qmy			
Qmi	Qmi_3, Qmi_2, Qmi_1	Pleistocene	
Qmo	Qmo_3, Qmo_2, Qmo_1		

IGNEOUS ROCKS

Tf (V V)		TERTIARY(?)
TMzu	TMzh (X X), TMzgq, TMzgr, TMzg	TERTIARY AND (OR) MESOZOIC

METAMORPHIC ROCKS

Pzu		PALEOZOIC(?)
Pzp€g	Pzp€a	PALEOZOIC AND (OR) PRECAMBRIAN

DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Qa ALLUVIUM--Gravel, sand, and silt; locally contains small amounts of organic silt and peat. Includes reworked glacial outwash

Qsu SILT, UNDIFFERENTIATED--Alluvial and colluvial sediment mixed with organic material; mostly perennially frozen and contains much ice

Qaf ALLUVIUM OF FAN DEPOSITS--Boulders, gravel, sand, and silt. Locally well to poorly stratified; well to poorly sorted

Qc COLLUVIUM--Includes some alluvium and, particularly at higher elevations, much till. Mostly boulders, gravel, sand, silt, and angular rock fragments. Only largest areas shown

Qag ALLUVIUM AND GLACIAL DEPOSITS--Gravel and sand with some boulders; locally includes silt, organic silt, and peat. Mostly alluvium, till, and outwash

Qmy MORAINAL DEPOSITS, YOUNGEST GLACIAL PHASE--Boulders, gravel, and sand; unweathered. Mostly end moraine and moraine in cirques. Moraines steep sided and sharp crested with ponds between ridges; vegetation sparse

Qmi MORAINAL DEPOSITS, INTERMEDIATE GLACIAL PHASE, UNDIFFERENTIATED--Boulders, gravel, and sand, very slightly weathered. Surface oxidation 7 to 13 cm. Mostly end moraine. Morainic ridges subdued with few undrained depressions. Vegetation well established. Locally divided into:

Qmi_3 Morainal deposits of the least extensive ice advance during this phase

Qmi_2 Morainal deposits of an intermediate advance of the ice during this phase

Qmi_1 Morainal deposits of the most extensive advance of the ice during this phase

Qmo MORAINAL DEPOSITS OF THE OLDEST GLACIAL PHASE, UNDIFFERENTIATED--Boulders, gravel, sand, and silty sand. Topography of moraines very subdued; in places covered by later deposits or destroyed by erosion. One or more of these advances may be the equivalent of a separate glacial phase. Locally divided into:

Qmo_3 Morainal deposits of the least extensive ice advance during this phase

Qmo_2 Morainal deposits of an intermediate advance of the ice during this phase. Surface oxidation extends to a depth of approximately 2 m

Qmo_1 Morainal deposits of the most extensive advance of the ice during this phase

IGNEOUS ROCKS

Tf (V V) FELSIC INTRUSIVE ROCKS--Includes small amount of felsic tuff and volcanic glass. Intrusive rocks occur as dikes, sills, and small plutons; mostly porphyritic with phenocrysts of quartz and feldspar, and locally hornblende and biotite. Quartz crystals commonly terminated, some embayed. Disseminated sulfides occur locally. Orange-brown color common from alteration. Tuff includes abundant crystals of quartz, feldspar, biotite, and hornblende. V indicates outcrops of volcanic glass

TMzu GRANITIC ROCKS, UNDIFFERENTIATED--Chiefly quartz monzonite and granodiorite, fine to coarse grained; mostly equigranular and locally porphyritic. Biotite dominant mafic mineral. Commonly cut by dikes and sills of other igneous rocks. Probably mostly Mesozoic in age but may include Tertiary rocks

TMzh (X X) QUARTZ MONZONITE AND GRANODIORITE OF MOUNT HARPER-- Fine to medium grained; primarily equigranular. Biotite most abundant mafic mineral but locally abundant hornblende. Contains rounded mafic xenoliths as much as 30 cm long. In places contains disseminated sulfides, probably mostly in veins and dikes. X indicates dioritic phase of the pluton

TMzgq GRANODIORITE AND (OR) QUARTZ MONZONITE--Medium to coarse grained. Has hornblende and large euhedral biotite

TMzgr GRANITE AND OTHER GRANITIC ROCKS--Medium and fine grained, equigranular; low in mafic minerals; locally silicified. White or light colored; weathers yellowish orange

TMzg GRANITE(?)--Coarse grained. Large pink and white potassium feldspar crystals as much as 5 cm long. Contains biotite. Weathers to grus

METAMORPHIC ROCKS

Pzu ULTRAMAFIC ROCKS--Serpentinized; larger masses recrystallized to actinolite, chlorite, talc, and magnetite. Pods of magnetite abundant in the larger masses. Bastite in a few outcrops indicates that the rock originally was peridotite. Well foliated. Weathers dark yellow brown

Pzp€g QUARTZ-BIOTITE GNEISS AND SCHIST--Includes quartzite, quartz-mica schist, and minor quartz-biotite-hornblende schist. Locally garnetiferous. Coarsely crystalline white or blue-green marble occurs in a few localities as rubble or in discontinuous layers. Quartz boudins and pods locally abundant. Veins of massive white quartz common. Upper greenschist or amphibolite facies

~~~ Areas of granitic gneiss and several types of light-colored gneisses. Small, intricate folds. Commonly mixed with granitic rocks

=-=-= Amphibolite and amphibole gneiss and schist. Amphiboles include tremolite, actinolite, and hornblende, but hornblende is the most common

ʻ ʻ ʻ ʻ Areas of hydrothermally altered gneiss. Muscovite locally abundant. Commonly has blotchy appearance due to segregations of dark minerals (mostly biotite). Usually orange brown in color

Pzp€a AUGEN GNEISS AND BIOTITE GNEISS WITH HETEROBLASTIC TEXTURE--Augen, mostly composed of white potassium feldspar, range in size from 1 to 10 cm long, most about 4 cm long. Augen may be present throughout the rock, widely scattered, or locally absent. Biotite is scarce to abundant. Foliation layers containing biotite bend around augen. Biotite gneiss very feldspathic and compositionally similar to augen gneiss except that augen are not developed. Foliation well developed throughout most rock, but locally obscure in augen gneiss with very large, closely spaced augen. Rocks of unit commonly cataclastic. Squares indicate areas known to have abundant augen

- Contact, approximate contact, and inferred contact
- Fault or probable fault
- Lineament observed on aerial photographs. Most lineaments are probably faults; a few may be dikes
- Maximum extent of glaciation in valleys, determined primarily from aerial photographs. Ticks face glaciated area
- Terrace scarp--mostly result of channeling by streams draining glaciers of the intermediate phase
- Rubble of granitic rocks mixed with rocks of the unit mapped
- Rubble of gneiss and (or) schist mixed with rocks of the unit mapped
- Augen gneiss mixed with rocks of the unit mapped
- Marble
- g Garnetiferous rocks
- 45 Strike and dip of foliation
- Vertical foliation
- Horizontal foliation
- 5 Azimuth and plunge of lineation
- Horizontal lineation
- df Felsic dike
- di Intermediate dike
- dm Mafic dike
- du Ultramafic dike
- dp Pegmatite dike
- Sulfides, mostly fine grained, widely disseminated
- SL Solifluction lobes common
- Pingo

BASE FROM U.S. GEOLOGICAL SURVEY 1:63360
BIG DELTA A-1, 1955; BIG DELTA B-1, 1958

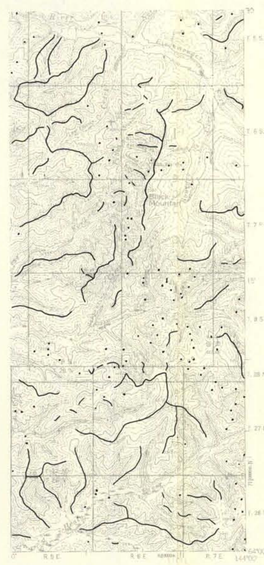
APPROXIMATE MEAN DECLINATION, 1955

SCALE 1:63360

CONTOUR INTERVAL 100 FEET
DATUM IS MEAN SEA LEVEL

SURFICIAL DEPOSITS PRIMARILY BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS BY F.R. WEBER

FIELDWORK DONE DURING THE PERIOD
AUGUST 20 TO SEPTEMBER 10, 1974



MAP OF BIG DELTA A-1 AND B-1 QUADRANGLES
SHOWING LOCATION OF FIELD OBSERVATIONS
— traverse
· point observation

INDEX MAP

RECONNAISSANCE GEOLOGIC MAP OF THE BIG DELTA A-1 AND B-1 QUADRANGLES, ALASKA

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1975

For sale by U. S. Geological Survey, price $.50

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