PRELIMINARY INTERPRETIVE REPORT 2017-3
Sicard and others, 2017
SHEET 1 OF 1
Explanatory text accompanies map
http://doi.org/10.14509/29722

DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

ALLUVIAL DEPOSITS

- Qa — UNDIFFERENTIATED FLOODPLAIN ALLUVIUM
- Qaa — ACTIVE-FLOODPLAIN ALLUVIUM
- Qab — ABANDONED-FLOODPLAIN ALLUVIUM
- Qaf — ALLUVIAL-FAN DEPOSITS
- Qai — INACTIVE-FLOODPLAIN ALLUVIUM
- Qat — ALLUVIAL-TERRACE DEPOSITS
- Qfb — FLOOD-BAR DEPOSITS

COLLUVIAL DEPOSITS

- Qc — UNDIFFERENTIATED COLLUVIUM
- Qcf — MIXED COLLUVIUM AND ALLUVIUM
- Qcg — ROCK GLACIER DEPOSITS
- Qcl — LANDSLIDE DEPOSITS
- Qct — TALUS AND BLOCKFIELD DEPOSITS

GLACIAL DEPOSITS

- Qgd2 — DRIFT OF LATE WISCONSINAN AGE (25,000 TO 11,000 y.b.p.)
- Qgd1 — DRIFT OF EARLY WISCONSINAN AGE (75,000 TO 40,000 y.b.p.)

GLACIOFLUVIAL DEPOSITS

- Qgf2 — OUTWASH DEPOSITS OF LATE WISCONSINAN AGE

GLACIOLACUSTRINE DEPOSITS

- Qgl — GLACIALLY IMPOUNDED LAKE DEPOSITS OF LATE WISCONSINAN AGE

NORTH OF DENALI FAULT

SEDIMENTARY ROCKS

- Tc — CONGLOMERATE (Tertiary?)

VOLCANIC ROCKS

- Kba — BASALTIC ANDESITE to ANDESITE FLOWS (Late Cretaceous)

INTRUSIVE ROCKS

- BASALTIC ANDESITE to ANDESITE DIKES (Late Cretaceous? to Tertiary)
- Kgd — GRANODIORITE and GRANODIORITE PORPHYRY (Late Cretaceous)
- TRACHYANDESITE DIKES (Late Cretaceous?)

METASEDIMENTARY AND META-IGNEOUS ROCKS

GREENSCHIST FACIES

- Tg — METAGABBRO (Triassic?)
- METAGABBRO DIKES (Triassic?)
- MDp — PHYLLITE, METACONGLOMERATE and MARBLE (Devonian-Mississippian?)
- MDgs — GRAPHITE-BEARING QUARTZ SCHIST with lesser METAVOLCANIC SCHIST (Devonian-Mississippian?)
- MDms — MAFIC METAVOLCANIC SCHIST with QUARTZ SCHIST and minor FELSIC METAVOLCANICS (Devonian-Mississippian?)
- MDcs — QUARTZITE and QUARTZ SCHIST with CALCAREOUS SCHIST and MARBLE (Devonian-Mississippian?)
- MDq — QUARTZITE and QUARTZ SCHIST (Devonian-Mississippian?)
- MDd — DRUM UNIT FELSIC SCHIST (Devonian-Mississippian?)
- Dfs — FELSIC METAVOLCANIC SCHIST (Devonian?)
- Dl — LAGOON UNIT SCHIST (Devonian?)

AMPHIBOLITE FACIES

- Dag — GRANITE AUGEN ORTHOGNEISS (Devonian?)
- Dg — GNEISS and SCHIST (Devonian?)

SOUTH OF DENALI FAULT

INTRUSIVE ROCKS

- Kqd — QUARTZ DIORITE (Cretaceous?)

METAMORPHIC ROCKS

- KJgn — GRAVINA-NUTZOTIN BELT (Late Jurassic-Early Cretaceous?)

EXPLANATION OF MAP SYMBOLS

LINEATIONS

- INCLINED SLICKENLINE, GROOVE, OR STRIATION ON FAULT SURFACE
- INCLINED ALIGNED-MINERAL LINEATION
- INCLINED ALIGNED STRETCHED-OBJECT LINEATION
- INCLINED LINEATION AT INTERSECTION OF TWO SURFACES
- INCLINED FOLD HINGE OF SMALL, MINOR FOLD
- HORIZONTAL FOLD HINGE OF SMALL, MINOR FOLD
- INCLINED CRENULATION LINEATION

MEASURED PLANES

- INCLINED BEDDING
- INCLINED CLEAVAGE
- INCLINED CRENULATION CLEAVAGE
- INCLINED METAMORPHIC FOLIATION
- INCLINED METAMORPHIC FOLIATION PARALLEL TO BEDDING
- INCLINED GNEISSIC LAYERING
- INCLINED DIKE WALL, symbol color matches associated map unit
- VERTICAL DIKE WALL, symbol color matches associated map unit

CONTACTS

- CONTACT - Identity and existence certain, location accurate
- CONTACT - Identity and existence certain, location approximate
- CONTACT - Identity and existence questionable, location inferred
- CONTACT - Identity and existence certain, location concealed
- CONTACT - Identity and existence questionable, location concealed
- INTERNAL CONTACT - Form lines to foliation in cross sections

FAULTS AND FOLDS

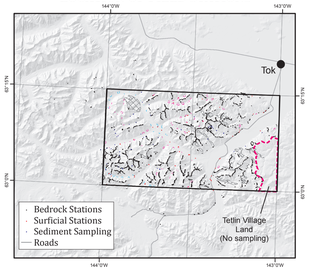
- FAULT - Identity and existence certain, location accurate
- FAULT - Identity and existence questionable, location accurate
- FAULT - Identity and existence certain, location approximate
- FAULT - Identity and existence certain, location inferred
- FAULT - Identity and existence questionable, location inferred
- FAULT - Identity and existence certain, location concealed
- FAULT - Identity and existence questionable, location concealed
- STRIKE-SLIP FAULT, RIGHT-LATERAL OFFSET - Identity and existence certain, location accurate
- STRIKE-SLIP FAULT, RIGHT-LATERAL OFFSET - Identity and existence certain, location concealed
- STRIKE-SLIP FAULT, LEFT-LATERAL OFFSET - Identity and existence certain, location accurate
- STRIKE-SLIP FAULT, LEFT-LATERAL OFFSET - Identity and existence certain, location inferred
- STRIKE-SLIP FAULT, LEFT-LATERAL OFFSET - Identity and existence certain, location concealed
- THRUST FAULT - Identity and existence questionable, location accurate
- THRUST FAULT - Identity and existence certain, location approximate
- THRUST FAULT - Identity and existence questionable, location concealed
- STRIKE-SLIP FAULT (in cross section) - A, away from observer; T, toward observer
- ANTIFORM - Identity and existence questionable, location inferred

MISCELLANEOUS MAP SYMBOLS

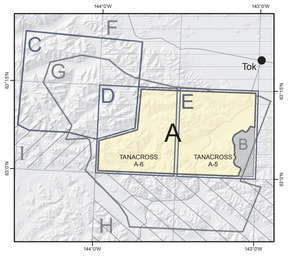
- SELECTED CONDUCTIVE AREA (≤500 OHM-M) IN 900 Hz RESISTIVITY DATA (Emond and others, 2015)
- GARNET in hand sample or thin section
- MARBLE
- CALCAREOUS SCHIST
- GRAPHITIC (CARBONACEOUS) SCHIST
- $^{40}Ar/^{39}Ar$ AGE LOCALITY - Labeled with sample number
- U-Pb ZIRCON AGE LOCALITY - Labeled with sample number
- DETRITAL ZIRCON AGE LOCALITY - Labeled with sample number
- A—A′ CROSS SECTION LINE AND LABEL
- APPARENT DIP (in cross section) - Dominant metamorphic foliation

The extent, graticule, tick marks, and latitude and longitude labels on this map are shown using the North American Datum of 1927 (NAD27). Data that are part of this publication use the North American Datum of 1983 (NAD83). Graticule marks shown in black are NAD27. Graticule marks shown in red are NAD83.

LOCATION OF FIELD STATIONS



DATA SOURCES

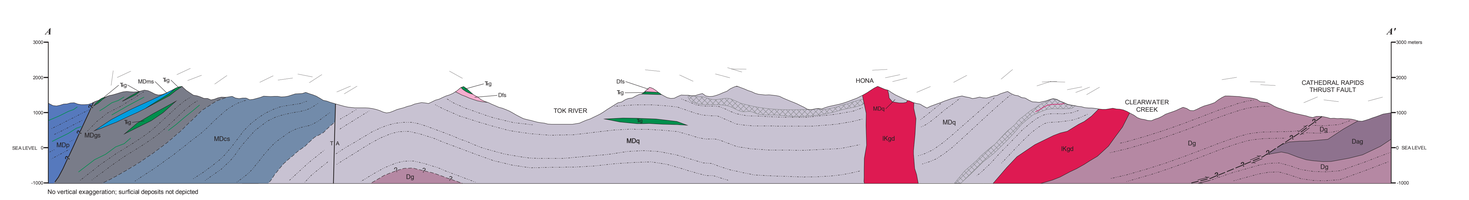


A: DGGS mapping during 2015-2016
B: Tetlin village land - geology interpreted by DGGS from SPOT5 satellite imagery
C: Bedrock geologic map of the Delta mineral belt, Tok mining district, Alaska (Dashevsky and others, 2003)
D: Tanacross A-6 Quadrangle (Sheet 43), Geologic maps of the eastern Alaska Range, Alaska (Nokleberg and others, 2015)
E: Tanacross A-5 Quadrangle (Sheet 42), Geologic maps of the eastern Alaska Range, Alaska (Nokleberg and others, 2015)
F: Reconnaissance geologic map of the Tanacross quadrangle, Alaska (Foster, 1970)
G: Tok electromagnetic and magnetic airborne geophysical survey data compilation, (Emond and others, 2015)
H: Geologic map of the Nabesna Quadrangle, Alaska, (Richter, 1976)
I: Geologic map of parts of the Mount Hayes A-1 and A-2 quadrangles,

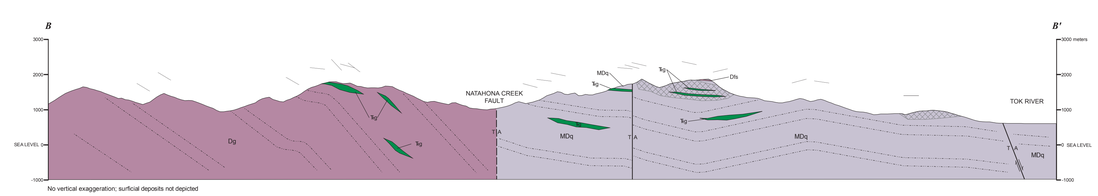




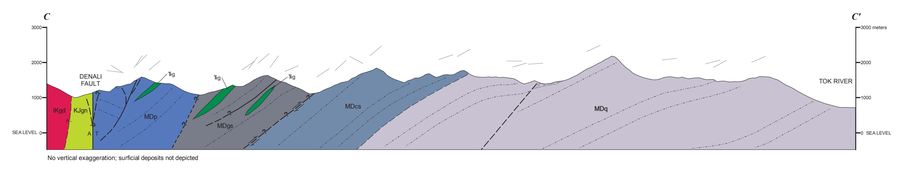
Location of Map Area



No vertical exaggeration; surficial deposits not depicted



No vertical exaggeration; surficial deposits not depicted



No vertical exaggeration; surficial deposits not depicted



Ductile folds within greenschist facies chlorite quartz schist of unit MDq near Station 16AW115 (Photograph by A.L. Willingham).

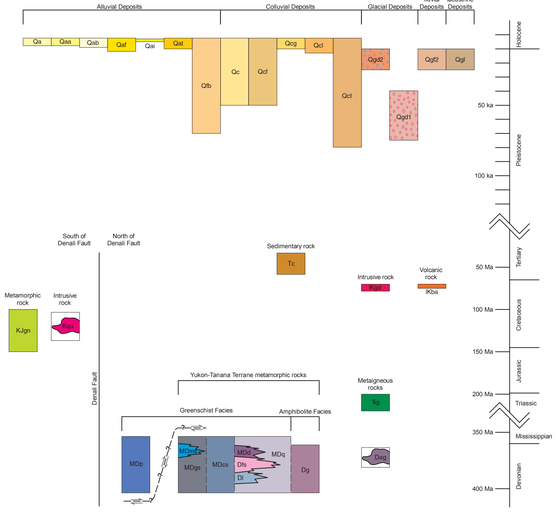


Characteristic brittle to ductile quartz schist chevron folds of unit MDgs at station 16LL162. Fracture surfaces are visible parallel to axial planes (Photograph by L.L. Lande).

Sample	Type	Age (Ma)	Material	Map unit	Age notes
15AW021	$^{40}Ar/^{39}Ar$	73.1 ± 0.9	biotite	lKgd	crystallization
15ET005	$^{40}Ar/^{39}Ar$	-	sericite	MDq	no preferred age
15ET031	$^{40}Ar/^{39}Ar$	71.1 ± 0.5	hornblende	lKgd	crystallization
15ET033	$^{40}Ar/^{39}Ar$	126.2 ± 0.5	biotite	Dag	metamorphic cooling
15KS026	$^{40}Ar/^{39}Ar$	75.8 ± 0.6	hornblende	lKgd	crystallization
15LF064	$^{40}Ar/^{39}Ar$	71.7 ± 0.5	whole rock	lKba	crystallization
16BG105	$^{40}Ar/^{39}Ar$	99.0 ± 0.4	biotite	lKba	crystallization
16ET484	$^{40}Ar/^{39}Ar$	124.7 ± 0.5	muscovite	Dg	metamorphic cooling
16KS042	$^{40}Ar/^{39}Ar$	121.6 ± 0.5	muscovite	MDq	metamorphic cooling
16KS215	$^{40}Ar/^{39}Ar$	58.4 ± 0.2	biotite	lKba	crystallization
16MBW209	$^{40}Ar/^{39}Ar$	125.2 ± 0.5	muscovite	Dfs	metamorphic cooling
15AW008	U-Pb	*in press*	zircon	Dg	crystallization
15DR027	U-Pb	*in press*	zircon	MDq	crystallization
15LL006	U-Pb	*in press*	zircon	lKgd	crystallization
15AW014	DZ	*in press*	zircon	Dg	age distribution
15KS048	DZ	*in press*	zircon	MDq	age distribution

$^{40}Ar/^{39}Ar$ ages reported in Benowitz and others (2017), U-Pb and DZ ages to be reported in: Holm-Denoma and others (in press).

CORRELATION OF MAP UNITS



GEOLOGIC MAP OF THE TOK RIVER AREA, TANACROSS A-5 AND A-6 QUADRANGLES, EASTERN ALASKA RANGE, ALASKA

by

Karri R. Sicard[1], Travis J. Naibert[1], Trent D. Hubbard[1], Evan Twelker[1], Alicja Wypych[1], Melanie B. Werdon[1], Amanda L. Willingham[1], Robert J. Gillis[1], Lauren L. Lande[2,3], and Rainer J. Newberry[2]

2017

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K.R. Sicard[1] (2015, 2016), E. Twelker[1] (2015, 2016), A. Wypych[1] (2015, 2016), L.L. Lande[1] (2015, 2016), D. Reioux[1] (2015), L.K. Freeman[1] (2015), T.J. Naibert[1] (2016), M.B. Werdon[1] (2016), A.L. Willingham[1] (2016), R.J. Gillis[1] (2016), R.J. Newberry[2] (2016)
Surficial geologic field investigations:
T.D. Hubbard[1] (2016)
Geologic interpretation by:
K.R. Sicard[1] (2016, 2017), T.J. Naibert[1] (2016, 2017), E. Twelker[1] (2016, 2017), A. Wypych[1] (2016, 2017), T.D. Hubbard[1] (2016, 2017), M.B. Werdon[1] (2016, 2017)
Geologic GIS data layers created by:
K.R. Sicard[1] (2016, 2017), T.D. Hubbard[1] (2016, 2017), T.J. Naibert[1] (2016, 2017)
Cartography by:
T.J. Naibert[1] (2016, 2017)
Cartographic review by:
P.E. Gallagher[1] (2017)
Peer review by:
J.E. Athey[1], R.D. Reger[4] (2017)

Topographic base map from:
U.S. Geological Survey topographic maps
Tanacross A-5 (1948)
Tanacross A-6 (1948 - minor revisions 1964)
Projection:
Universal Transverse Mercator Zone 7 North
Datum:
The extent, graticule, tick marks, and latitude and longitude labels on this map are shown using the North American Datum of 1927 (NAD27). Data that are part of this publication use the North American Datum of 1983 (NAD83).

SCALE 1:63360

1 0.5 0 1 2 3 4 5 MILES
3000 0 3000 6000 9000 12000 15000 18000 21000 24000 27000 FEET
1 0.5 0 1 2 3 4 5 6 7 KILOMETERS

CONTOUR INTERVAL 100 FEET
TANACROSS A-5 — DASHED LINES REPRESENT HALF-INTERVAL CONTOURS
TANACROSS A-5 — NATIONAL GEODETIC VERTICAL DATUM OF 1929
TANACROSS A-6 — DATUM IS MEAN SEA LEVEL

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