ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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SHEET 1 OF 2
explanatory text accompanies map
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GEOLOGIC MAP OF THE CASTLE MOUNTAIN - CARIBOU FAULT SYSTEM
TALKEETNA MOUNTAINS, ALASKA

Mapped by: William A. Fuchs, Ph.D.

ROCK UNITS

IGNEOUS ROCK UNITS

- Ta — **ALBITE GRANITE PORPHYRY** (Middle Tertiary (?)): Intrusive quartz-albite granite porphyry; localized in Castle Mountain - Caribou fault zone.
- ***** — **DIABASE DIKE** (Middle to Late Tertiary): Includes dike swarms.
- Tm — **PYROXENE GABBRO** (Tertiary): Probably equivalent to diabase dikes in part and older in part.
- Tv — **VOLCANIC ROCKS** (Eocene): Mafic to felsic volcanic rocks; flows with interbeds of tuff, ash, and breccia; minimum several hundred meters thick.
- Tf — **RHYOLITE-DACITE PORPHYRY INTRUSIVE** (Eocene): Endogenous domes, plugs, and shallow-level stocks; whole-rock analyses of 31 samples indicates compositions ranging from rhyolite to dacite, but rhyolite is slightly dominant (formerly designated quartz latite); typically porphyritic, deeper level equivalent to Eocene volcanic flows & tuffs, where stippled: altered and pyritic tuff (may include altered intrusive in part); lined pattern indicates intrusive rhyolite-dacite porphyry and Talkeetna Formation.
- Jr — **QUARTZ DIORITE** (Lower to Middle Jurassic): Medium-grained hornblende quartz diorite and subordinate diorite and tonalite.

SEDIMENTARY ROCK UNITS

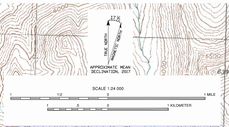
- Qal — **SURFICIAL DEPOSITS** (Quaternary): Alluvium, colluvium, terrace gravels, glacial moraine, outwash, landslides; only large areas of this unit are mapped.
- Tw — **WISHBONE FORMATION** (Eocene and Paleocene): Well-indurated pebble-cobble conglomerate with thick interbeds of sandstone, siltstone, and claystone; 600 to 900 m thick.
- Tc — **CHICKALOON FORMATION** (Paleocene): Well-indurated, massive feldspathic sandstone, siltstone, claystone, and conglomerate with numerous beds of bituminous coal; at least 1,500 m thick.
- Km — **MATANUSKA FORMATION** (Cretaceous): Predominantly dark shale and siltstone in lower part; interbedded dark shale and sandstone, locally conglomeratic in the upper part; about 1,200 m thick.
- Jc — **CHINITNA FORMATION** (upper Middle Jurassic): Dark gray shale and siltstone with interbeds of grywacke and numerous large limestone concretions; 250 m exposed thickness.
- Jt — **TUXEDNI GROUP** (Middle Jurassic): Well-indurated graywacke, sandstone, and conglomerate in lower part, and dark siltstone and shale that weathers brown in upper part; 140 to 370 m thick.
- Jtf — **TUFF** (Lower Jurassic (?)): Tuff and tuffaceous sandstone, white with variable mottled limonite, well-bedded in places; thought to be uppermost member of Talkeetna Formation (Horn Mountain Tuff member), but may be Tertiary volcanic; 245 m thick.
- Jl — **TALKEETNA LIMESTONE** (Lower Jurassic): Light to dark gray, fine-to-medium-grained limestone; marble in part; up to 75 m thick.
- Jtk — **TALKEETNA FORMATION** (Lower Jurassic): Andesitic flows, flow breccia, tuff, and lapilli tuff; interbedded with fossiliferous arkosic sandstone and siltstone; locally altered to greenstone; about 1,000 to 2,000 m thick, where stippled: altered and pyritic tuff (may include altered intrusive in part); lined pattern indicates intrusive porphyry stocks of equivalent age (?).

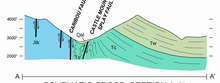
LEGEND

- **CONTACT** - Solid line where position of contact is known with some certainty; dashed where position of contact approximate; queried where contact uncertain.
- **FAULT** - Solid line where good geologic evidence of faulting; dashed where fault approximately located; dotted where concealed; queried where position of fault uncertain; U, upthrown block; D, downthrown block; arrows show relative horizontal movement; ball shows direction and amount of dip on the fault plane.
- **FAULT OCCUPIED BY DIABASE DIKE**
- **SYNCLINE** - Showing trace of axial plane and bearing and plunge of axis, dashed where approximately located or concealed; arrow shows plunge direction on fold axis.
- **MINOR FOLDS** - Showing trace of axial plane and bearing and plunge of axis for anticline and syncline.
- **STRIKE AND DIP**
- **HORIZONTAL BEDS**
- **VERTICAL BEDS**
- **MAP LIMIT**
- **STATION LOCALITY** - Corresponds to field notes of W.A. Fuchs (provided separately). Shown in subdued type.

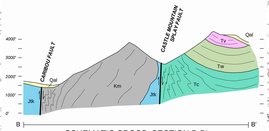
USGS 15 minute topographic quads, Anchorage (D-3, D-4, D-5) UTM NAD 1927 Zone 6

Location Map

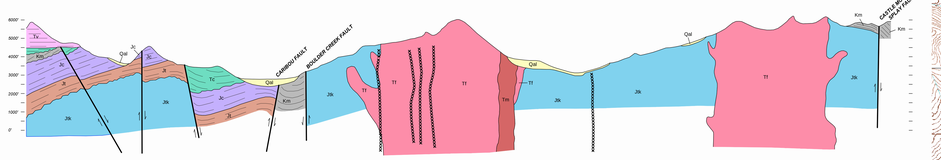




SCHEMATIC CROSS SECTION A-A'
LOOKING EASTWARD
(NO VERTICAL EXAGGERATION)



SCHEMATIC CROSS SECTION B-B'
LOOKING EASTWARD
(NO VERTICAL EXAGGERATION)



SCHEMATIC CROSS SECTION C-C'
LOOKING EASTWARD
(NO VERTICAL EXAGGERATION)

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This map was constructed by the author as an essential part of his Ph.D. dissertation at the University of Utah. Mapping was conducted during the field seasons of 1977, 1978, and 1979.

Fuchs, W. A., 1980, Tertiary Tectonic History of the Castle Mountain-Caribou Fault System,Alaska: Salt Lake City, University of Utah, Ph.D. dissertation, 152 p.