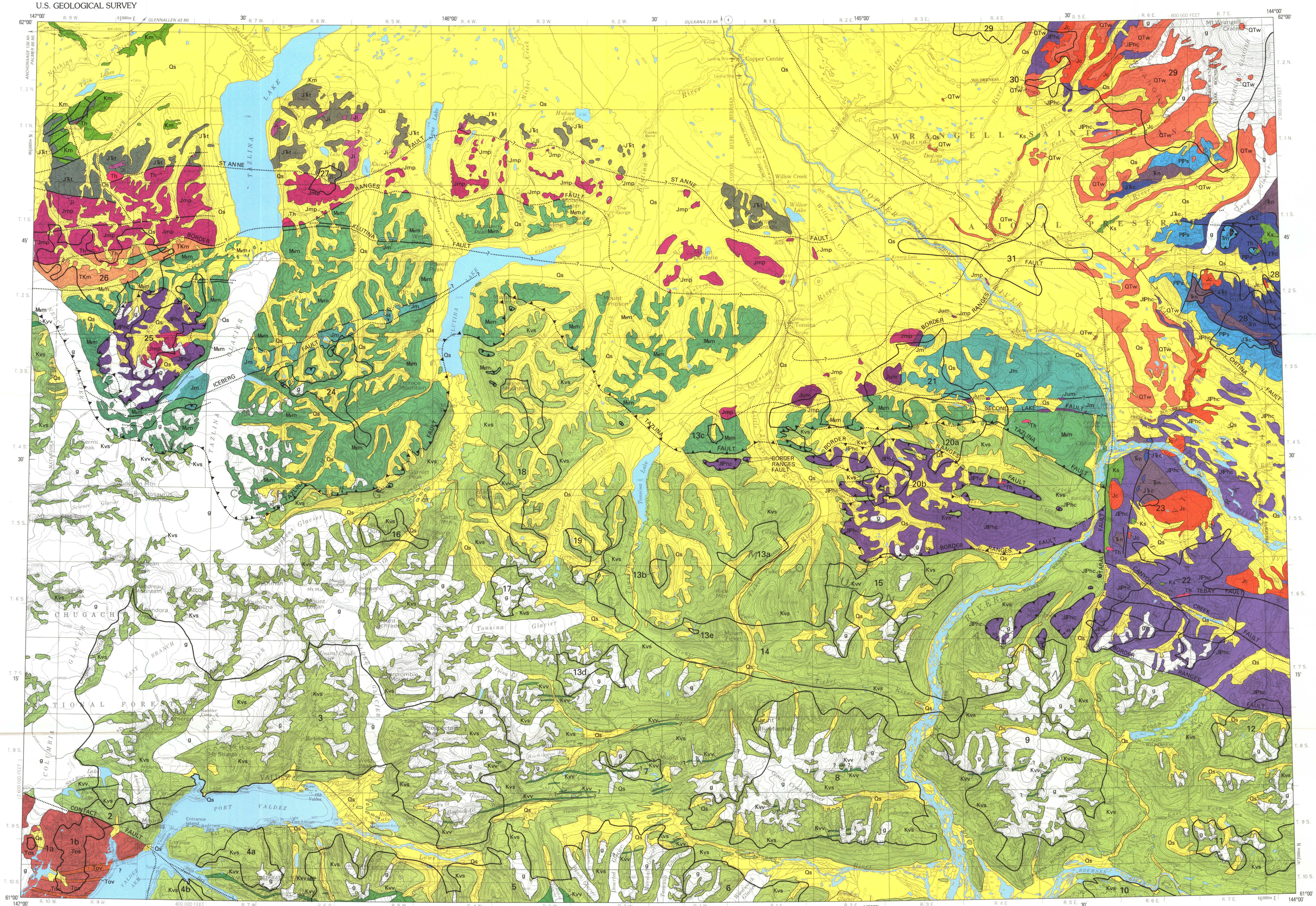
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

BULLETIN 2084
PLATE 1



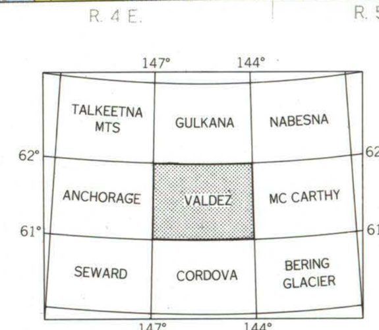
Base from U.S. Geological Survey, 1960
Universal Transverse Mercator Projection. 1927 North American Datum
100,000 Foot grid based on Alaska Coordinate System, Zone 3
10,000 Meter Universal Transverse Mercator grid ticks, Zone 6

SCALE 1:250000

5 0 5 10 15 20 25 MILES

5 0 5 10 15 20 25 KILOMETERS

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES IN FEET-DATUM IS MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
1994 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET IS 26°32' EAST



QUADRANGLE LOCATION

Geology generalized from Winkler and others (1981) and Plafker, Lull, and others (1989)

CORRELATION OF MAP UNITS

ALL TERRANES
Surficial Deposits

Qs } QUATERNARY

Plutonic Rocks

Th } Eocene } TERTIARY

WRANGELLIA TERRANE
Sedimentary and Volcanic Rocks

QTw } Holocene to Miocene } QUATERNARY AND TERTIARY
Ks } Early Cretaceous } CRETACEOUS
J̶Tr̶c } Late or Middle Jurassic to Late Triassic } JURASSIC AND TRIASSIC
Tr̶n } Late and (or) Middle Triassic } TRIASSIC
PIPs } Early Permian and Pennsylvanian } PERMIAN AND PENNSYLVANIAN

Plutonic Rocks

Jc } Late Jurassic } JURASSIC

Metamorphic Rocks

JIPhc } Late Jurassic and Pennsylvanian and older(?) } JURASSIC AND PENNSYLVANIAN AND OLDER(?)

PENINSULAR TERRANE
Sedimentary and Volcanic Rocks

Km } Late and Early Cretaceous } CRETACEOUS
JTr̶t } Early Jurassic and Late Triassic(?) } JURASSIC AND TRIASSIC(?)

Plutonic Rocks

Ji } Late Jurassic } JURASSIC
Jmp, Jum } Middle Jurassic and older(?) } JURASSIC AND OLDER(?)

CHUGACH TERRANE
Sedimentary and Volcanic Rocks

Kvv, Kvs, Mzm } Late Cretaceous } CRETACEOUS } MESOZOIC

Metamorphic Rocks

TKm } TERTIARY OR CRETACEOUS
Jm } JURASSIC OR OLDER

PRINCE WILLIAM TERRANE
Sedimentary and Volcanic Rocks

Tov, Tos } Eocene and Paleocene } TERTIARY

DESCRIPTION OF MAP UNITS

ALL TERRANES

Surficial Deposits

Qs **Surficial deposits, undivided (Quaternary)**

Plutonic Rocks

Th **Hypabyssal intrusive rocks (Eocene)**—Altered granite, granodiorite, or tonalite

WRANGELLIA TERRANE

Sedimentary and Volcanic Rocks

QTw **Wrangell Lava (Holocene to Miocene)**

Ks **Marine sedimentary rocks (Early Cretaceous)**—As mapped, consists of Berg Creek Formation and unnamed marine sedimentary rock

JTr̶c **Marine clastic and carbonate rocks, undivided (Late or Middle Jurassic to Late Triassic)**—As mapped, consists of Kotsina Conglomerate (Middle or Late Jurassic), lower part of McCarthy Formation (Late Triassic), and Chitistone and Nizina Limestones (Late Triassic)

Tr̶n **Nikolai Greenstone (Late and (or) Middle Triassic)**

PIPs **Skolai Group (Early Permian and Pennsylvanian)**

Plutonic Rocks

Jc **Chitina Valley batholith (Late Jurassic)**

Metamorphic Rocks

JIPhc **Haley Creek metamorphic assemblage (Late Jurassic and Pennsylvanian or older?)**—As mapped, consists of Uranatina River metaplutonic unit (Jurassic and Pennsylvanian) and Strelna Metamorphics of Plafker, Lull, and others (1989) (Early Pennsylvanian and older?)

PENINSULAR TERRANE

Sedimentary and Volcanic Rocks

Km **Matanuska Formation (Late and Early Cretaceous)**

JTr̶t **Talkeetna Formation (Early Jurassic and Late Triassic?)**

Plutonic Rocks

Ji **Intrusive rocks (Late Jurassic)**—As mapped, consists of tonalite, granodiorite, and graphic granite

Jmp **Layered mafic plutonic rocks (Middle Jurassic and older?)**—As mapped, consists of the Nelchina River Gabbronorite (Middle Jurassic and older?), layered gabbro of the Tonsina ultramafic-mafic sequence, and layered quartz-bearing gabbro of Klanelneechena Creek

Jum **Ultramafic rocks (Middle Jurassic and older)**—As mapped, consists of harzburgite, dunite, and websterite of the Tonsina ultramafic-mafic sequence

CHUGACH TERRANE

Sedimentary and Volcanic Rocks

Valdez Group (Late Cretaceous)—Divided into:

Kvs **Sedimentary rocks**

Kvv **Mafic volcanic rocks**

Mzm **McHugh Complex (Mesozoic)**

Metamorphic Rocks

TKm **Melange (Tertiary or Cretaceous)**

Jm **Greenschist and transitional blueschist facies metamorphic rocks (Jurassic or older)**—As mapped, consists of schist of Liberty Creek and schist o Iceberg Lake

PRINCE WILLIAM TERRANE

Sedimentary and Volcanic Rocks

Orca Group (Eocene and Paleocene)—Divided into:

Tos **Flyschoid sedimentary rocks**

Tov **Tholeiitic volcanic rocks**

g **Glaciers and superglacial moraine**

Contact—Approximately located. Dotted where concealed; queried where assumed

50 **High-angle fault**—Approximately located, showing dip. Dotted where concealed; queried where assumed

Thrust fault—Approximately located, showing dip; saw teeth on upper plate. Dotted where concealed; queried where assumed

3 **Geochemically anomalous area**

GEOCHEMICALLY ANOMALOUS AREAS

1. Prince William terrane
2. Twin Falls Creek
3. Port Valdez mining district
4. South Port Valdez
5. Central sulfide belt
6. Woodworth Glacier
7. Cascade Creek
8. Cleave Creek Glacier
9. East side of the Copper River
10. Bremner River
11. East Fork of the Bremner River
12. East of Tebay Lakes
13. Tonsina mining district
14. Tiekel River–Stuart Creek
15. Ernestine Creek
16. Mt. Ourand
17. North of Tonsina Glacier
18. Black Mountain
19. Greyling Lake
20. Kimball Pass
21. Bernard and Dust Creeks
22. Summit Lake
23. Taral Creek
24. Hallet River–Iceberg Lake
25. Klanelneechena Creek
26. Nelchina Glacier
27. High Lake
28. Kotsina River mining district
29. Wrangell Mountains
30. Dadina River
31. Copper River

REFERENCES

Jones, D.L., and Silberling, N.J., 1979, Mesozoic stratigraphy—The key to tectonic analysis of southern and central Alaska: U.S. Geological Survey Open-File Report 79–1200, 41 p.

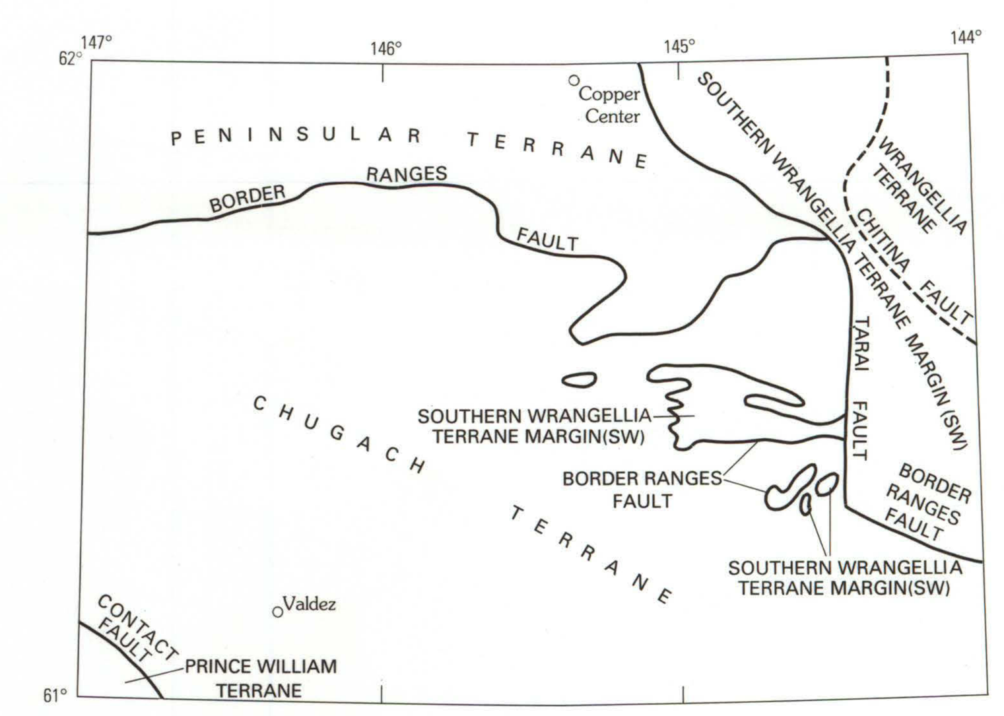
Jones, D.L., Silberling, N.J., and Hillhouse, J., 1977, Wrangellia—A displaced terrane in northwestern North America: Canadian Journal of Earth Sciences, v. 14, p. 2565–2577.

Plafker, George, Jones, D.L., and Pessagno, E.A., Jr., 1977, A Cretaceous accretionary flysch along the Gulf of Alaska margin, *in* Blean, K.M., ed., U.S. Geological Survey in Alaska—Accomplishments during 1976: U.S. Geological Survey Circular 751–B, p. B41–B43.

Plafker, George, Lull, J.S., Nokleberg, W.J., Pessel, G.H., Wallace, W.K., and Winkler, G.R., 1989, Geologic map of the Valdez A–4, B–3, B–4, C–3, C–4, and D–4 quadrangles, northern Chugach Mountains and southern Copper River Basin, Alaska: U.S. Geological Survey Open-File Report 89–569, scale 1:125,000, 1 sheet.

Plafker, George, Nokleberg, W.J., and Lull, J.S., 1989, Bedrock geology and tectonic evolution of the Wrangellia, Peninsular, and Chugach terranes along the Trans-Alaska Crustal Transect in the Chugach Mountains and southern Copper River Basin, Alaska: Journal of Geophysical Research, v. 94, no. B4, p. 4255–4295.

Winkler, G.R., Silberman, M.L., Grantz, A., Miller, R.J., and MacKevett, E.M., Jr., 1981, Geologic map and summary geochronology of the Valdez quadrangle, southern Alaska: U.S. Geological Survey Open-File Report 80–892–A, scale 1:250,000, 2 sheets.



Bedrock units of the Valdez 1°x3° quadrangle are divided into four fault-bounded terranes that differ in stratigraphy, structural style, or age (paleontologic or radiometric) of their component rocks. From north to south, the terranes are (1) Wrangellia (Jones and others, 1977), (2) Peninsular (Jones and Silberling, 1979), (3) Chugach (redefined by Plafker and others (1977), and (4) Prince William (Jones and Silberling, 1979). Penetratively deformed rocks between the Taral and Chitina faults are interpreted to be deeply buried and metamorphosed equivalents of the type Wrangellia terrane and are included in the southern Wrangellia terrane margin of Plafker, Nokleberg, and Lull (1989).

MAP SHOWING GEOLOGY AND GEOCHEMICALLY ANOMALOUS AREAS, VALDEZ 1° × 3° QUADRANGLE, SOUTH-CENTRAL ALASKA

By
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1995