Richard and Spencer, 1997
North Butte Area
Arizona Geological Survey
Open-File Report 97-4

MAP UNITS

Volcanic and Sedimentary rocks

- d — **Disturbed surficial deposits** (Holocene).
- Qs — **Undivided surficial deposits** (Holocene to Pleistocene;
- Qsy — **Young alluvium** (Holocene and late Pleistocene).
- Qo — **Old alluvium** (Middle to early Pleistocene).
- Qc — **Pedogenic carbonate** (Holocene or Pleistocene)
- QTs — **Weakly consolidated conglomerate** (Quaternary and Tertiary).
- QTr — **River gravels** (Quaternary or Tertiary).
- QTls — **Landslide deposits** (Quaternary or Tertiary).
- Tby — **Basalt** (Late Miocene, 8.9±0.3 Ma, K-Ar, w.r.).
- Tsy — **Sandstone and conglomerate** (Miocene).
- Tc — **Conglomerate** (Miocene).
  - Tcur — Rhyolite-clast conglomerate
  - Tcv — Conglomerate, volcanic lithic facies.
- Tbd — **Basalt of Donnelly Wash** (Miocene).
- Tt — **Tuff**, undivided (Miocene).
  - Ttf — Felsite-lithic tuff, undivided.
  - Marker beds
  - Tts — Tuff and tuffaceous sediments, undivided.
  - Tts_2 — Tuffaceous sediments, upper.
  - Ttf_2 — Felsite-lithic tuff, upper.
  - Ttp — Pinal schist-clast tuff.
  - Ttl — Biotite crystal tuff.
  - Tts_1 — Tuffaceous sediments, lower.
  - Ttf_1 — Felsite-lithic tuff, lower.

Geology Mapped 1995-1996

- Tvsb — **Vitrophyre of South Butte** (Miocene).
- Tvx — **Volcanogenic breccia of South Butte** (Miocene).
- Trn — **North Butte rhyolite complex** (Miocene).
- Tx — **Rock avalanche breccia** (Miocene).
- Td — **Dacite of North Butte** (Miocene).
- Ttb — **Tuff of North Butte** (Miocene, 19.1 ± 0.1 Ma, $^{40}Ar/^{39}Ar$, san.).
- Tw — **Whitetail Conglomerate** (Miocene or Oligocene).

Intrusive rocks

- Til — **Lithic-rich felsite dike** (Miocene).
- Tf — **Intrusive or extrusive felsite** (Miocene).
  - Contact between non-fragmental and fragmental zones
- TKmd — **Mafic dikes** (Tertiary or Cretaceous).
- TKap — **Aplite and aplite dikes** (Paleocene or Late Cretaceous).
- TKp — **Pegmatite dikes** (Paleocene or Late Cretaceous).
- **Teacup granodiorite** (Paleocene or Late Cretaceous).
  - TKtc — Equigranular biotite phase
  - TKtm — Muscovite granite phase
- TKxs — **Silicified and hematite stained breccia** (Paleocene or Cretaceous).
- **Laramide dikes** (Paleocene or Late Cretaceous).
  - TKm — Mixed fine-grained mafic to porphyritic felsic dike
  - TKq — Felsic dike
  - TKgp — Granite porphyry dike
  - TKa — Plagioclase porphyry dike
- TYa — **Aplite dikes** (Tertiary, Cretaceous, or Proterozoic).
- TYd — **Fine-grained diorite dike** (Tertiary, Cretaceous, or Proterozoic).
- TXgd — **Equigranular granodiorite** (Tertiary, Cretaceous, or Proterozoic).
- Yd — **Apache diabase** (Middle Proterozoic).
- Yg — **Porphyritic biotite granite** (Middle Proterozoic).
  - Ygu — Biotite granitoids, undivided.
  - Yge — Equigranular biotite granite.
  - Ygf — Fine-grained biotite granite.
  - Ygp — Aplite porphyry.
- YXgp — **Mixed granitoid and schist** (Middle and Early Proterozoic).
- Xp — **Pinal schist** (Early Proterozoic).

N MN 14°

SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

Base map from USGS North Butte (1964) and Florence SE (1965) 1:24,000 topographic quadrangles. Polyconic projection, 1927 N. American datum.

Geologic Map of the North Butte Area, central Arizona

Stephen M. Richard and Jon E. Spencer

1997
Arizona Geological Survey Open-File Report 97-4

SYMBOLS

FOLIATION

All foliations-strike line types:

planar irregular approximate

Primary foliation

upright vertical BEDDING

APPARENT DIP OF BEDDING

FLOW FOLIATION (eutaxitic foliation in welded tuff)

Tectonic features

COMPOSITIONAL BANDING

QUARTZ-HEMATITE VEIN

MINERALIZED JOINTS

MAFIC DIKE

CONTACTS

Solid lines--precise location, dashed lines--approximate location, dashed lines with queries--very approximate, and dotted lines--inferred beneath younger blanketing or intrusive units.

intrusive or depositional contact

FAULTS

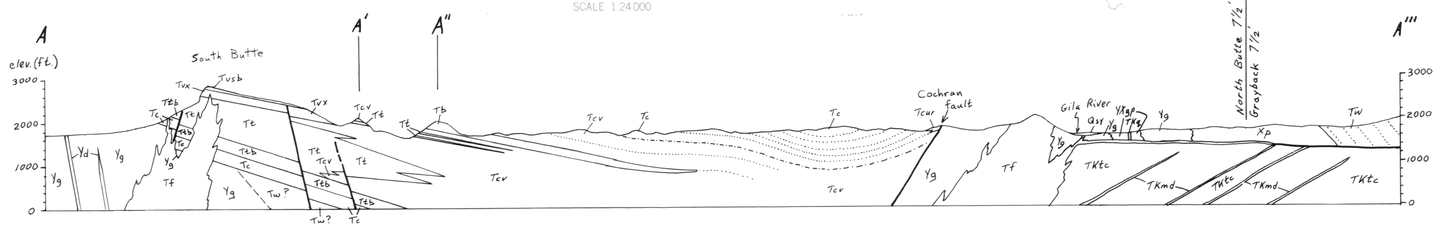
HIGH ANGLE (ball on down-thrown side, arrow indicates dip)

LOW ANGLE (barbs on hanging wall)

low-angle normal fault

MISCELLANEOUS

Tie line joining regions underlain by same map unit

Sample location for age determination

Mineralized shear zone