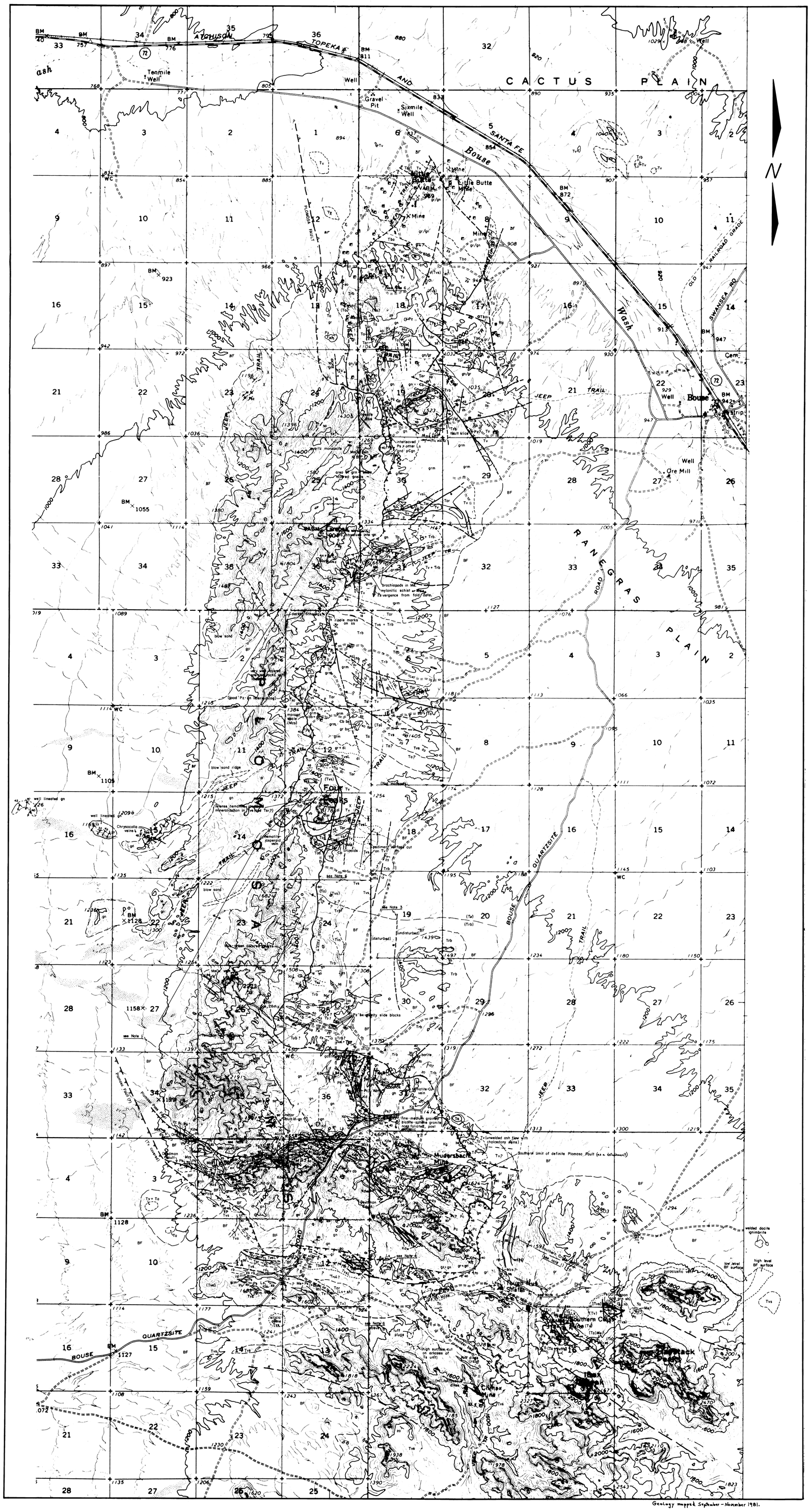

LEGEND

CENOZOIC

- Pleistocene blow sand
- **Q** — Quaternary sediments
- **BF** — Basin fill sediments, post 12 m.y. - undeformed
- **Trb** — Red beds - debris-flow dominated red-brown colored fanglomerates, with occasional barite veins. Probably mid-Miocene age (17 - 14 m.y.).
- **Tv** — Undifferentiated volcanic rocks
- **Tvs** — Silicic volcanics (rhyolites to dacites) with many thick unwelded ash flows in the south. Mostly 26 - 19 m.y. in age, possibly as young as 16 m.y. in places.
- **rd** — Rhyolitic dikes probably related to Tvs
- **Ta** — Lower andesites and andesite flow breccias in several areas, perhaps 20 - 100 feet thick. Probably 24 -29 m.y. in age. Thin red beds at base of andesites locally, in the south, labeled rb. Upper plate Ta dikes are andesitic to microdioritic.
- **Tar** — Thin bedded limestones with interbedded mudstones, varicolored but with red and brown colors common, with intercalated silicic ash flows. Equivalent to Artillery Fm. farther northeast. (Jemmett's Golden Door Shale). Perhaps 100 - 500 feet thick.
- **Tba** — Arkosic conglomerate with quartzite clasts, colored white or red-brown with rare green colors. Equivalent to basal conglomerate of Artillery Fm.. Named Bouse arkose by Jemmett (1966). Perhaps 0 - 100 feet thick.
- **TvsL** — Lower ash flows, perhaps 0 - 150 feet thick.
- **Ts** — Green and yellow tuffaceous sediments associated with TvsL.

MESOZOIC

- **Kg** — Granite, fine to medium grained, biotite (black) and sphene bearing,undeformed. Probably 85 - 70 m.y. age, based on dated granites farther east. Exxon K/Ar biotite 85±5 m.y. on this pluton. number reported Nov. 1983
- **Kd** — Dikes of microgranite, related to Kg, mostly NW trending. includes some microdioritic dikes.
- **Kdw** — Very fine grained white or light-colored dikes, trending toward cryptocrystalline textures, related to Kg.
- **Mzs** — Mesozoic fine-grained sediments, somewhat metamorphosed and tectonized. Protoliths are shales, mudstones, sandstones, and a few conglomerates. Probably equivalent to the Livingston Hills Fm. farther south, where 16,500 foot-thick sections are known. In this area, structural thicknesses of perhaps 50 - 300 feet are seen. Probable Jurassic age. Many units are now phyllitic with muscovite along old bedding planes.

PALEOZOIC OR MESOZOIC

- **ev** — Evaporites (gypsum and mudstone), either alpha member of Kaibab limestone or basal Mesozoic evaporite.
- **q** — White, somewhat friable meta-siltstone probably not Pc, 20 - 40 feet thick.

PALEOZOIC

- **Pk** — Kaibab Limestone - blue gray and very cherty white limestones. Fossils of gastropods and brachiopods in the south; beta member.
- **Pc** — Coconino Sandstone - fractured white meta-sandstones and siltstones.
- **Ps** — Supai Formation - dark massive "worm-eaten" limestones and faintly interbedded limestones and limey siltstones, weathering to medium brown colors.
- **Me** — Escabrosa Limestone - white to cream-colored massive limestones, crinoid fossils around Four Peaks.
- **Dm** — Martin Formation - sandy dolomites, massive beds, weathers to medium brown.
- **Ꞓa** — Abrigo Formation - interbedded thin limestones and siltstones.
- **Ꞓb** — Bolsa Quartzite - maroon to tan medium-grained orthoquartzite, weathers to very dark colors.
- **Ls** — Undifferentiated limestones of probable Paleozoic age.

PRECAMBRIAN

- **grm** — Granite with large (to 1½ cm) K-spar phenocrysts ("megacrystic"), probably a 1,400 m.y. age equivalent of Ruin and Oracle Granites farther east. With thin diabase dikes locally.
- **gr** — Medium-grained granite to quartz monzonite, with abundant biotite and some hornblende, medium gray on fresh faces. Probably 1,600 - 1,700 m.y. age.
- **di** — Coarse-grained diorite probably associated with the 1,700 m.y. granite.
- **gn** — Gneissic terrain, very complex, with metacrystalline and probable metavolcanic and metasedimentary rocks (in the north), containing pegmatites, aplites, and lesser deformed granitic intrusions. Mineral foliation patterns trend generally NNE and define larger-scale NNE-trending antiforms and a multitude of smaller-scale folds throughout the area. Most lithologies subjected to amphibolite-grade metamorphism. Structural thickness perhaps 1000 - 2000 feet.

MAP SYMBOLS

- Strike and dip of bedding
- Strike and dip of foliation, arrow shows plunge direction of mineral lineation
- Mineralized veins showing dip angle
- Dots and connecting lines indicate same lithologies
- High-angle fault showing dip angle, dot on downthrown side
- Low-angle fault showing dip angle, teeth on upper plate; arrow shows slicknside lineation plunge direction
- Strike-slip fault
- Listric fault, open dots on downthrown side. Dashed where inferred.
- Anticlinal axial trend
- Synclinal axial trend
- Monocline middle limb axial trend, arrows point downdip
- Local direction of tectonic vergence (movement vector of upper plate) based on closure of rooted "S" or "Z" folds
- Direction of stream flow deduced from pebble imbrication directions, for conglomeratic units.
- Low-angle Miocene detachment fault, dashed where inferred, parts of which are reactivated low-angle thrusts of Eocene? or Cretaceous? age.

NOTES

Note 1: Anticline inferred from arching of the Miocene detachment surface (Plomosa Fault).

Note 2: Many of the secondary thrusts between the Plomosa Pass Fault and the Deadman Fault are not shown because of space limitations.

Note 3: Redbeds to east are flat-lying; redbeds to the west are intensely deformed.

Note 4: There are many slices of Paleozoic carbonates and quartzites intercolated into Precambrian crystalline rocks by a combination of thrusting and listric faulting; tectonic relationships for these thin slices are not shown.

Note 5: The Paleozoic rocks within the volcanic terrain are gravity slide blocks; they are overlain depositionally by Tvs.

Note 6: Volcanic contacts not always mapped within volcanic terrain; scattered lithologies derived from spot sampling, shown in parentheses.

GEOLOGIC MAP OF NORTHERN PLOMOSA MOUNTAINS
YUMA COUNTY, ARIZONA

4 DECEMBER 1981

ROBERT SCARBOROUGH
NORMAN MEADER

SCALE 1:24,000

ARIZONA GEOLOGICAL SURVEY CONTRIBUTED MAP SERIES CM-89D

For additional information about the Norhthern Plomosa Mountains, please refer to Arizona Geological Survey Open File Report # OFR-83-24.