

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

S P MOUNTAIN QUADRANGLE ARIZONA-COCONINO CO. 15 MINUTE SERIES (TOPOGRAPHIC)

EXPLANATION BASALTIC AGE-GROUP (Moore and others, 1974)
Table with columns for geological periods (QUATERNARY, TERTIARY, TRIASSIC, PERMIAN) and sub-periods (Pleistocene, Pliocene, Lower Triassic, Lower Permian). It lists various geological units with their corresponding symbols (e.g., Qe, Qal, Qis, Qta, Tcb, Rcs, Rmw, Pka, Pkb, Pc).

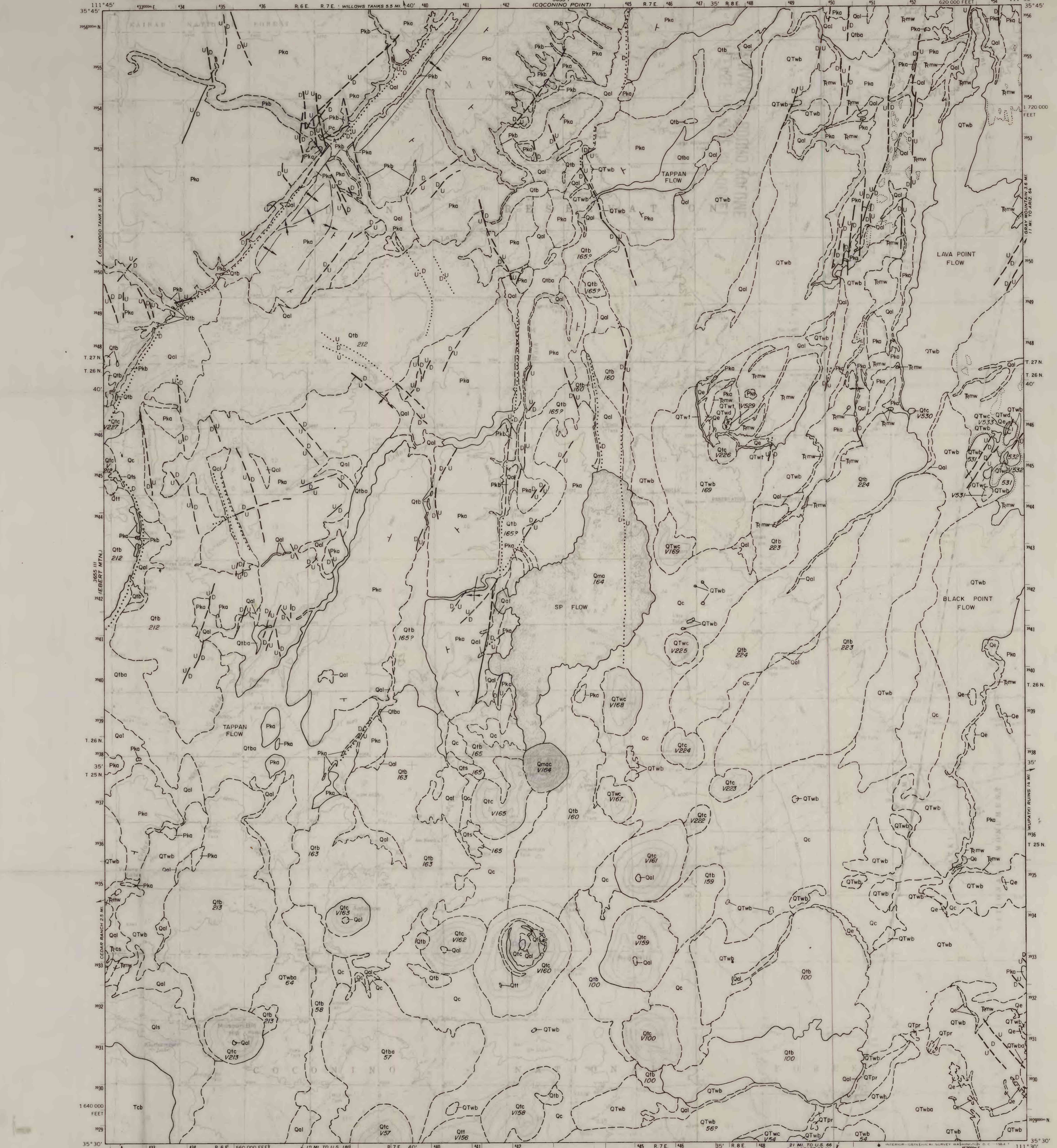
DESCRIPTION OF MAP UNITS
Official Symbols (Quaternary or Tertiary)
Qe: Ash; eolian, laesitic; reworked from ash-fall deposits of local cinder cones.
Qal: Fluvium; reworked sand, silt, clinders, and gravel.
Qis: Landslide deposits; developed on Cienega Formation in southwest corner of quadrangle.
Qc: Cinders; laesitic; mapped only where underlying unit is unknown.
Qtw: Spatter; rhyolitic; presumably airfall in southeastern area; source unknown.

VOLCANIC UNITS
MERIAM AGE-GROUP (Pleistocene)
Qmac: SP 'Mesa' Cone (see text); pyroclastic laesitic andesite; cone rim sharp and unweathered (Hodges 1962).
Qma: SP lava flow (H6); blocky laesitic andesite; 8-12 inch clinders; age of 70,000 to 10,000 years by radiocarbon reported by Damon and others (1974, p. 235).
TAPPAN AGE-GROUP (Pleistocene)
Qtc: Cinder cone; laesitic; includes local laesitic spatters; cone rim rounded but little dissected.
Qts: Tuff; laesitic with xenoliths of igneous and sedimentary rocks in a palagonitic matrix; mapped separately in associated cinder cones 160 and 272; unit is blanketed by cinders in vent 156 on south slope. Ultrabasic and calcareous xenoliths occur in vent 160 (Stoeser, 1974, and Cummins, 1972).
Qtd: Spatter; fragmental spatter of laesitic cinders, scoria, and lava.
Qtb: Basalt flow; rhyolite; flow margins undisturbed.
Qta: Tappan basalt flow; aphyric; follows Cedar Wash for most of its course to the little Colorado River 17 to northeast of the quadrangle. Type flow for the Tappan age-group. Air age is 0.350 to 0.079 (Damon and others, p. 228).

CEDEAR RANCH AGE-GROUP (Pliocene)
Qtc: Cinder cone; laesitic; generally subdued and dissected rim; includes local laesitic spatters.
Qtd: Basalt flow; rhyolite; lava commonly has been toward northeast on increasingly younger sedimentary strata. Unit includes mixture of three extrusive stages defined by superposition and lithology. 8-hr ages in mapped area are: Lava flow 164, 0.40 to 0.10 m.y.; vent 169 flow, 1.83 to 0.07 m.y.; Black Point flow, 1.39 to 0.32 m.y. (Damon and others, p. 227).
Qte: Basalt flow; aphyric.
Qtf: Basalt flow; plagioclase-rhyolite; in vents 529 and 533 in northeast quadrant of map. Air age of vent 529 has four age of 3.05 to 0.39 m.y. (Damon and others, p. 227).
Qtg: Tuff; laesitic with xenoliths of sedimentary rocks and Franciscan granite (1730 to 15 m.y., L. S. Silver written copy) in a palagonitic matrix. Unit is an isolated cinder cone. Radiocarbon dated around vent 529; it underlies laesitic flow from vent 160 of Quaternary age-group and vent 224 of Tappan age-group.

SEDIIMENTARY UNITS
CENEGA FORMATION (Upper Triassic)
Tca: Shinarump member; sandstone and conglomerate, yellowish-gray; contains some carbonized wood fragments; 8 to 10' thick.
HICKORY FORMATION (Lower Triassic)
Tbw: Mopai member; sandstone, siltstone, and shale, reddish-brown; locally has quartzite or quartzite fragments; contains conglomerate at base. 1-102 m thick. Massive sandstone 15' to 100' thick occurs about 25 m above base (contact horizon).
RAIDAS FORMATION (Lower Permian)
Pka: Alpha member; sandy dolomite and dolomitic sandstone; minor chert; pale orange-tan to yellowish-gray; lenticular, cross-laminated, coarse-grained quartz sands occur at base and locally above. 12-35 m thick.
Pkb: Beta member; sandy dolomite, cherty, blackish-yellow to pale yellowish-brown. 15-15' thick. Additional 5' thick unit of dolomitic sandstone and basal orange-brown dolomite had 1 m thick or less of formation mapped in northeast corner of quadrangle may be Tappan Formation.
COCONINO SANDSTONE (Lower Permian)
Pc: Sandstone; cross-bedded; very fine to medium grained; 11 m thick in northeast corner of quadrangle; base not exposed.

MAP SYMBOLS
Contact
Dashed where approximately located
Fault
Dashed where approximately located, dotted where concealed; U-shaped trace, inversion side
Strike and dip of erosional surface on Raibas Formation
V66: Vent number 164
Lava flow from vent 164; sources for unnumbered flows are unknown



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This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

GEOLOGIC MAP OF THE SP MOUNTAIN QUADRANGLE COCONINO COUNTY, ARIZONA By G. E. Ulrich and N. G. Bailey 1974

Geology mapped 1967-1974. Locally compiled and revised from mapping in 1967-1968 by D. H. Dahlem, G. C. Schaber, D. V. Haines, H. R. Brock, R. L. Sutton, and E. W. Wolfe. Addition of new roads and power line to 1962 topographic map was done by J. D. Crossen and A. G. Dahl. Part of the work was performed in support of astronaut training under NASA contracts ON-7124, O-652369, and O-58744.

