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TEI-848

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
U.S. ATOMIC ENERGY COMMISSION

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DESCRIPTION OF MAP UNITS

Qst SLOPEWASH AND TALUS (0-50+ ft)--unconsolidated sand and gravel; includes alluvium in minor washes, which dissect these deposits.

Qp PLAYA DEPOSITS (0-400+ ft)--yellowish-gray clay, silt, and fine sand.

Qa ALLUVIUM (0-2,000+ ft)--unconsolidated and caliche-cemented sand and gravel; includes alluvial fans, pediments, washes, and locally windblown sand and silt; many siliceous gravels coated by desert varnish.

Qco OLDER COLLUVIUM (0-30 ft)--mainly angular to subangular blocks of Eureka Quartzite as large as 30 ft across in matrix of orange, red, and brown siliceous sand, silt, and clay. Occurs in northern Ranger Mountains.

Qat LOWER TERRACE ALLUVIUM (0-100+ ft)--unconsolidated and caliche-cemented sand and gravel; chiefly alluvial fans and pediments; includes alluvium in minor washes, which dissect these deposits; most siliceous gravels coated by desert varnish; generally crudely bedded; forms prominent low terrace.

QTa HIGHER TERRACE ALLUVIUM AND GRAVEL (0-50 ft)--mainly angular to well-rounded chatter-marked pebbles, cobbles, and boulders as much as 1½ ft in diameter of pre-Cenozoic quartzite and carbonate, and subordinate conglomerate, chert, siltstone, sandstone, and Tertiary limestone; well cemented in matrix of caliche and reworked tuff; most siliceous gravels coated by desert varnish; forms high terrace remnants near south edge of quadrangle and in northern Ranger Mountains.

PIAPI CANYON FORMATION:

Tpat TUFF OF AMMONIA TANKS (0-150+ ft)--rhyolitic multiple-flow compound-cooling unit ash-flow and ash-fall tuffs; central red and purple zone of dense welding and eutaxitic structure grading through gray partly welded zones into pink and white nonwelded zones; thin brown shard-rich zone generally present near base; densely welded zone locally contains an upper and lower vitrophyre; thin white stratified ash-fall tuff locally at base. Glassy to partly devitrified; 25± percent phenocrysts of sanidine, plagioclase, quartz, biotite, and pyroxene.

Tpr RAINIER MESA MEMBER (0-200+ ft)--rhyolitic simple-cooling-unit ash-flow and ash-fall tuffs; zones of welding and color similar to tuff of Ammonia Tanks except for presence of well-developed vapor-phase crystallization near top. Glassy to partly devitrified; 10± percent phenocrysts of sanidine, quartz, plagioclase, and biotite.

Tpb BEDDED TUFF (0-50 ft)--rhyolitic bedded tuff and possibly minor nonwelded ash-flow tuff; generally zeolitized.

ROCKS OF WAHMONIE FLAT:

Twf LAVA FLOWS AND FLOW BRECCIAS (0-500 ft)--dacites, dark-gray to black; flows characteristically zoned with stony interior grading outward through glassy zone into zone of flow breccia; generally flow banded and sheeted. Glassy to holocrystalline; porphyritic; 30-40 percent phenocrysts of plagioclase, pyroxene, biotite, and magnetite. Unit equivalent to upper part of lava-flow sequence of Wahmonie Flat area.

Twtb TUFF, SANDSTONE, AND TUFF BRECCIA (0-500 ft)--gray, white, and red laminated to very thick bedded biotite-rich pumiceous and lithic tuff, sandstone, and tuff breccia; lithic fragments as large as 4 inches across; locally cross laminated.

Tpa ROCKS OF PAVITS SPRING (0-100+ ft)--sandstone and siltstone, white and gray, tuffaceous, calcareous, clayey, laminated to thin-bedded. Rare pale-red and grayish-pink aphanitic clayey laminated to very thin bedded limestone. Occurs in southwest corner of quadrangle.

DOLOMITE (1,710± ft):

D_{U_6} UNIT 6 (300± ft)--light-gray ledgy dolomite. Medium to light gray, weathering light to very light gray, some darker beds of medium gray to light olive gray in upper part; aphanitic to finely crystalline;[1] some quartz sand layers and scattered grains in upper 50 ft; laminated to thin bedded (laminae etch out in aphanitic parts); lower part locally recrystallized fine to medium, vuggy; lower part locally thicker bedded. Unit forms ledges and cliffs.

DS_{U_5} UNIT 5 (300± ft)--light-, medium-, and dark-gray banded craggy dolomite. Darker beds weather to shades of medium gray; some lighter beds weather medium light gray and show faint laminae; finely to medium crystalline, some coarsely crystalline and vuggy beds; thick- to very thick-bedded, abundant faint laminae; some dark- and medium-gray beds in upper part contain rod-shaped fossils. Upper 85 ft very slightly banded and transitional with overlying unit. Unit forms cliffs.

S_{U_4} UNIT 4 (300± ft)--light-gray craggy dolomite. Medium-gray, weathering medium to light gray, commonly mottled; aphanitic to finely crystalline, some beds are medium crystalline and vuggy; laminated to thin bedded. Unit forms cliffs. Similar to unit 2 (S_{U_2}).

S_{U_3} UNIT 3 (435± ft)--dark-gray ledgy dolomite. Dark to medium gray; common chert layers, lenses, and blebs in upper and lower part; aphanitic to finely crystalline; middle part locally silty and clayey; 50-foot-thick light-gray aphanitic to coarsely crystalline vuggy unit in upper part; laminated to thin bedded; silicified fossils, including *Halysites*, *Favosites*, *Aulocites*, *Spongophylloides* cf. *Pilophyllum* and *S.*cf. *Rhegnaphyllum*;[2] basal part recrystallized in southern part of area and is similar to underlying unit 2 (S_{U_2}). Unit forms ledgy slopes and cliffs.

S_{U_2} UNIT 2 (260± ft)--light-gray craggy dolomite. Medium gray, weathering medium to light gray and commonly mottled; finely to coarsely crystalline, vuggy; rare chert blebs; faint laminae and thin beds; numerous recrystallized poorly preserved pelmatozoan columnals and coral heads as much as 1 foot in diameter. Unit forms massive cliff.

S_{U_1} UNIT 1 (115 ft)--dark-gray craggy dolomite. Dark to medium gray; aphanitic to finely crystalline; some chert lenses, nodules, and blebs throughout unit; basal 20 ft contains chert layers as much as 2 inches thick; thinly laminated to thin bedded; upper 60 ft contains silicified and dolomitized fossils including *Halysites*.[2] Unit forms cliff.

Oes ELY SPRINGS DOLOMITE (260± ft)--light gray in upper part and dark gray in lower part. Upper part (150± ft)--medium-gray, weathering light gray; aphanitic to finely crystalline; laminated to thin bedded; local chert lenses and blebs; quartz sand zone 15 ft below top; basal 25 ft silty and clayey, shaly to platy; some silicified and dolomitized fossils; forms ledgy slope. Lower part (110± ft)--dark- to medium-gray; finely crystalline, lighter gray parts medium to coarsely crystalline; some quartz sand layers and scattered grains; some chert lenses and blebs; white dolomite veinlets common; laminated to thin bedded; basal 20 ft sandy dolomite. Abundant tiny dolomitized pelmatozoan debris and some corals including "*Lambeophyllum*" and *Bighornia*?.[2] Lower part forms ledges and cliffs.

Oe EUREKA QUARTZITE (400± ft)--brown ledgy unit. Uppermost unit (20± ft)--gray and brown fine-grained dolomitic quartzite to sandy dolomite; thin to thick bedded; forms ledge. White quartzite and sandstone (120± ft)--weathers gray and brown; vitreous and very fine- to medium-grained laminated to thick-bedded sandstone; locally cross laminated; quartzite indistinctly bedded; forms cliff. Varicolored quartzite (150± ft)--red, white, gray, orange, yellow, and brown; mottled; very fine to fine grained, silty; laminated to thin bedded; common worm borings; forms ledgy slope. Quartzite and sandstone (20± ft)--brown; very fine to medium grained; cross laminated; forms cliff. Carbonate unit (35± ft)--finely to medium crystalline dolomite in upper part and medium to coarsely crystalline limestone and limy siltstone in lower part; lower part locally is dolomite; medium gray, mottled and weathered in shades of gray and brown; laminated to thin bedded; limestone is fossiliferous, silty layers contain twiglike algae; forms ledgy slope. Basal quartzite (55± ft)--medium-gray, white to light-gray in upper 25 ft; weathers yellow and brown; very fine to medium grained, vitreous in upper part; common gnarly laminae especially in lower part; dolomitic at base; numerous worm borings; forms cliff.

POGONIP GROUP:

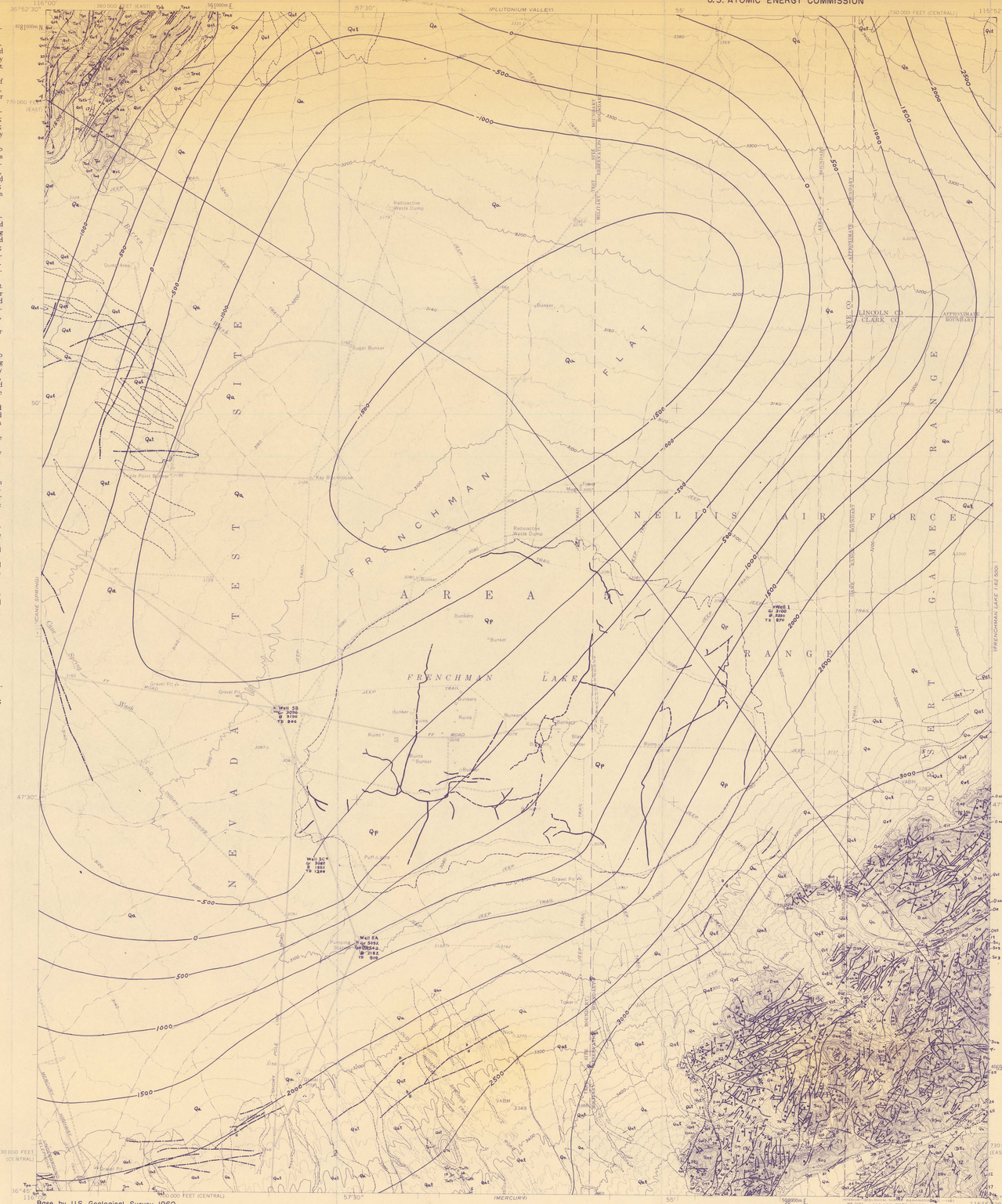
ANTELOPE VALLEY LIMESTONE:

Oaa Aysees Member (950± ft)--upper part contains brown silty zones and lower part is gray cliffy limestone. Upper part (450 ft)--limestone and silty-sandy limestone; medium-gray, some red and yellowish gray; aphanitic to finely crystalline; some beds contain chert lenses, nodules, and blebs; several laminated to thin-bedded quartzose silty-sandy limestone zones weather shades of orange and brown; two pink ledges in lower part; many rusty zones are persistent throughout area; some irregular silty partings and blebs; silty-sandy limestone, locally cross laminated and ripple marked, commonly contains twiglike algae; unit very fossiliferous; represents widespread *Anomalorthis-Desmorthis* faunal zone; forms varicolored ledges and cliffs. Lower part (500± ft)--limestone and minor irregular silty laminae, medium- to dark-gray, weathers to medium gray and yellowish gray; aphanitic to finely crystalline; laminated to very thick bedded; fossiliferous, common *Pallisteria*, *Maclurites*, *Receptaculites*, and straight-coned cephalopods;[3] represents widespread *Pallisteria* faunal zone; cavernous; forms massive cliffs and rounded ledges.

Oar Ranger Mountains Member (180± ft)--brown and gray slope-forming limestone and silty limestone; medium dark-gray, weathers mottled medium gray, yellow, and red along silty layers; aphanitic to finely crystalline; laminated; silty laminae are wavy and commonly draped around limestone blebs; 5-foot-thick silty-cherty zone forms dark-brown band 70 ft above base; abundant silicified brachiopods in upper part; represents widespread *Orthidiella* faunal zone; forms steep ledgy slope.

Oap Paiute Ridge Member (400± ft)--upper part is gray cliffy limestone and lower part contains brown mudstone beds. Upper part (100± ft)--limestone and minor silty limestone; medium gray; weathers lighter shades of gray and yellowish gray; finely to coarsely crystalline; thin to thick bedded; upper part forms cliff and contains numerous straight-coned cephalopods; lower part forms ledges and contains interbedded finely crystalline silty limestone and a few thin units of laminated siltstone and claystone that weather pale red and yellowish gray to grayish yellow; lower 50 feet transitional with underlying unit. Lower part (300± ft)--limestone to silty limestone and interbedded laminated siltstone and claystone; limestone similar to upper part except thinner bedded and commonly contains irregular network of brown silty laminae that etch into a "chicken-wire" pattern; unit contains numerous zones of thinly laminated red, yellow, and brown siltstone and claystone, especially in lower part; forms ledgy slope.

[1] Grade scale for authigenic crystalline sediments used is aphanitic (<0.06 mm), finely crystalline (0.06-0.25 mm), medium crystalline (0.25-0.5 mm), and coarsely crystalline (0.5-2 mm).
[2] Fossils identified by W. A. Oliver, Jr.
[3] Fossils identified by R. J. Ross, Jr.



Base by U.S. Geological Survey, 1960

SCALE 1:24 000
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
½ 0 1 MILE
1 0 1 KILOMETER
CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

16° TRUE NORTH / MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1960

NEVADA
QUADRANGLE LOCATION

EXPLANATION

Qp | Qst / Qa — Slopewash, talus, playa deposits, and alluvium
Qst, *slopewash and talus;*
Qp, *playa deposits;*
Qa, *alluvium*

Qco — Older colluvium

Qat — Lower terrace alluvium

QTa — Higher terrace alluvium and gravel

QUATERNARY

UNCONFORMITY

TERTIARY OR QUATERNARY

Tpat — Tuff of Ammonia Tanks

UNCONFORMITY

Tpr — Rainier Mesa Member

UNCONFORMITY(?)

Tpb — Bedded tuff

Pliocene — Piapi Canyon Formation

UNCONFORMITY

Twf — Lava flows and flow breccias

Twtb — Tuff, sandstone, and tuff breccia

Miocene and Pliocene — Rocks of Wahmonie Flat

UNCONFORMITY

Tpa — Rocks of Pavits Spring

TERTIARY

UNCONFORMITY

D_{U_6} / DS_{U_5} / S_{U_4} / S_{U_3} / S_{U_2} / S_{U_1} — Dolomite
D_{U_6}, *unit 6;*
DS_{U_5}, *unit 5;*
S_{U_4}, *unit 4;*
S_{U_3}, *unit 3;*
S_{U_2}, *unit 2;*
S_{U_1}, *unit 1*

DS_U — Dolomite units 4 and 5, undifferentiated

Lower Devonian — DEVONIAN

SILURIAN

UNCONFORMITY(?)

Oes — Ely Springs Dolomite

Oe — Eureka Quartzite

Upper Ordovician / Middle Ordovician

Oaa / Oar / Oap — Antelope Valley Limestone
Oaa, *Aysees Member;*
Oar, *Ranger Mountains Member;*
Oap, *Paiute Ridge Member*

Lower and Middle Ordovician — Pogonip Group

ORDOVICIAN

Contact
Dashed where approximately located; dotted where concealed

Fault, showing relative movement and dip
Dashed where approximately located or probable; dotted where concealed. U, upthrown side; D, downthrown side; bar and ball on downthrown side of fault. Hachures indicate fault scarp or fault-line scarp against which younger rocks were deposited; hachures on side of younger deposit. In Frenchman Playa, the fault symbol represents cracks that are believed to be largely the result of desiccation.

Fault or lineament, from photographs

Strike and dip of beds or ash-flow layering

Strike and dip of fluidal layering or sheeting

X — Prospect pit

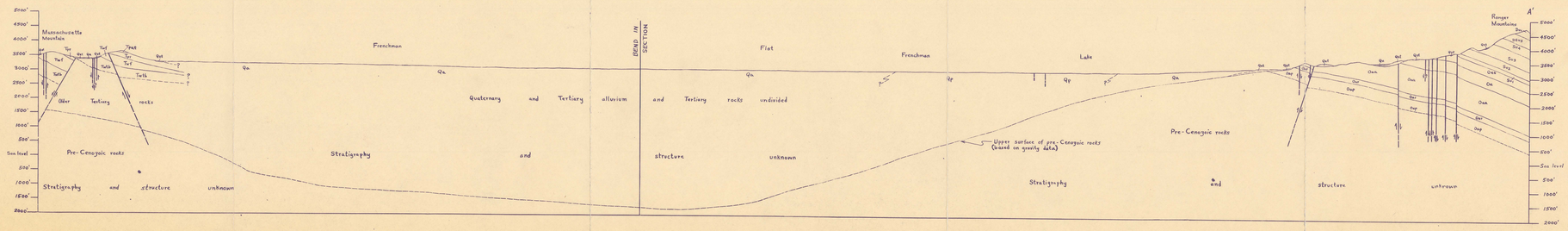
Well 5A
Gr 3092
Tpa(?) 2542
B 2162
TD 910 — Drill hole
Showing ground elevation (Gr), elevation of tops of map units, and elevation of bottom of hole (B), in feet. TD, total depth, in feet

1500 — Inferred contours
Drawn on present upper surface of buried pre-Cenozoic rocks. Contours based on gravity data. Dashed where questionable. Interval 500 feet. Datum is mean sea level

Geology mapped in 1962, Contours on pre-Cenozoic rocks by D.L. Healey and C.H. Miller, 1958-63

GEOLOGIC MAP OF THE FRENCHMAN FLAT QUADRANGLE, NYE, LINCOLN, AND CLARK COUNTIES, NEVADA

By
F.G. Poole
1964



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Nevada (Frenchman Flat quad). Geol. 1:24,000. 1964.
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