DISTRICT	Elko County General
DIST_NO	0050
COUNTY If different from written on document	Elho
TITLE If not obvious	Miscellaneous Notes About Goology of Eller County
AUTHOR	Coate R. Bushnell, K; Pauling, L; Axelcod, D
DATE OF DOC(S) MULTI_DIST Y / N? Additional Dist_Nos: QUAD_NAME	1970-1971; 1980 + 1984
P_M_C_NAME (mine, claim & company names)	
COMMODITY If not obvious	
NOTES	Handwritten notes; Correspondence; geology; mineral lists; descriptions of geologic map units Coats denation NOTES: Cards have writing on backs 30.p.
Keep docs at about 250 pages if (for every 1 oversized page (>11 the amount of pages by ~25) Revised: 1/22/08	



DEPARTMENT OF GEOLOGY

Phone (412) 794-7304

June 9, 1971

Robert R. Coats U. S. Geological Survey Meulo Park, California 94025

Dear Bob,

Sorry that I'm so late in responding to your letter, but finally the semester is over and I can answer some of the questions.

Yes, I am willing to accept referral of the Pzc, unit to the Tennessee Mountain Foundation.

As far as subsurface information for Elks County, during the time that I was with Chevron, the company had no activity in that area. We did have a couple of teams in the Las Vegas and Ely-Eureka areas but that was for only about 1 or 2 summers.

One of the best sources for Chevron activity is Mr. E. C. Bowman, 1149 Skycrest Drive #3, Walnut Creek, California 94595. I believe that now he is in a minerals exploration branch of Standard of California, but he was the Division Geologist at Salt Lake City.

I appreciate your willingness to act as a sponsor for my nomination to a GSA Fellow. I will act on this suggestion during the summer and send you the necessary forms. Thanks again.

Yours very truly,

Sent Bushnell

KB:ds

LINUS PAULING INSTITUTE of SCIENCE and MEDICINE

2700 Sand Hill Road, Menlo Park, California 94025 Telephone: (415) 854-0843

6 October 1980

Pins (auling

Dr. Robert R. Coats U.S. Geological Survey Menlo Park, CA 94025

Dear Dr. Coats:

I was surely pleased to receive a sample of massive zunyite from Elko County, Nevada, from you, with a copy of the preliminary report by you and others.

I thought that I would send you a reprint of my 1933 zunyite paper, but I find that I no longer have any copies. Nor do I have any copies of the molybdenite paper - molybdenite was the first mineral on which I worked. I am, however, enclosing a copy of the paper by Sterling Hendricks and me on hematite and corundum.

I am still interested in zunyite, but am devoting my time now to work on cancer.

Under separate cover I am sending you a copy of the book by Dr. Cameron and me on Cancer and Vitamin C.

Sincerely,

LP:dm

UNIVERSITY OF CALIFORNIA, DAVIS

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SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF BOTANY

DAVIS, CALIFORNIA 95616

Nov. 30, 1983

Dear Bob,

Many thanks for the reprint on the overlapping thrust belts of late Paleozoic and Mesozoic rocks in northern Elko County.

I have received an NSF grant to complete my work in the Bull Run basin and will be there next summer. In this regard, I have been well aware for some time that the cross-section of structure on my map is incorrect. In view of your much broader knowledge of the region, could you make a revised sketch for me of the structure (E-V) across the basin?

Cordially,

20-

Dra iel I. Axelrod

UNIVERSITY OF CALIFORNIA, DAVIS

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SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF BOTANY

DAVIS, CALIFORNIA 95616

Oct. 29, 1982

Dear Bob,

A question about the volcanic rocks in the NW corner of the Preliminary Geol. Map of Elko County. In the NW corner of Sheet 2, above Hicks Mountain, there are rocks mapped as Eocene volcanics.

Are these the SW extension of the Challis Volcanics? They are across the Snake R. plain and come down ot its edge west of Hailey where they are quite thick.

Hope to get back to the Bull Run problem this summer and clean it up...

Regards,

Da

Dan I. Axelrod

5-756-6114



United States Department of the Interior

GEOLOGICAL SURVEY BOXx25946x M.S. 939 DENVER FEDERAL CENTER DENVER, COLORADO 80225

Jan 4, 1984

Dear Bob, Thanks for the information on the Triassic of the Mt. Velma area. I wrote to Kraetsch asking exactly where he found the ammonoids.

Sounds like a good idea to co-author a new version of the Mt. Velma quadrangle or even a substantial part of it if the whole quad proves to be too big a job. I will plan to examine the Triassic and upper Paleozoic to see if it makes sense in terms of what I learned in the Adobe Range and Peko Hills. Do you have a manuscript map? If so could you send a copy so I can add to it.

Regards,

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SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF GEOLOGY

DAVIS, CALIFORNIA 95616

Dear Bob,

Sorry I do not have a colored copy to give you but the only extra one was loaned to some vert. paleontologists, and has not been returned.

If you have some extra help there you can send them up here and copy the colors off my copy.

I hope to finish writing this paper during the preset year. Most that remains is the tedious describption of the fossils. All the rest is complete.

If you color this map, and find some goofs, let me know about them

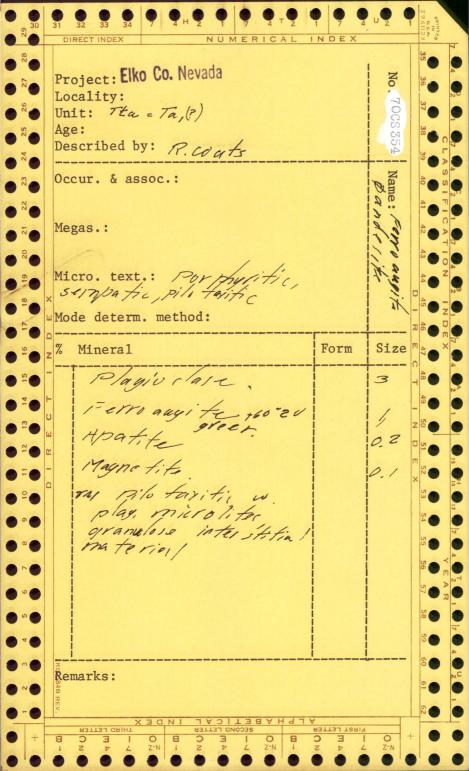
Best,

GH BERT BOND

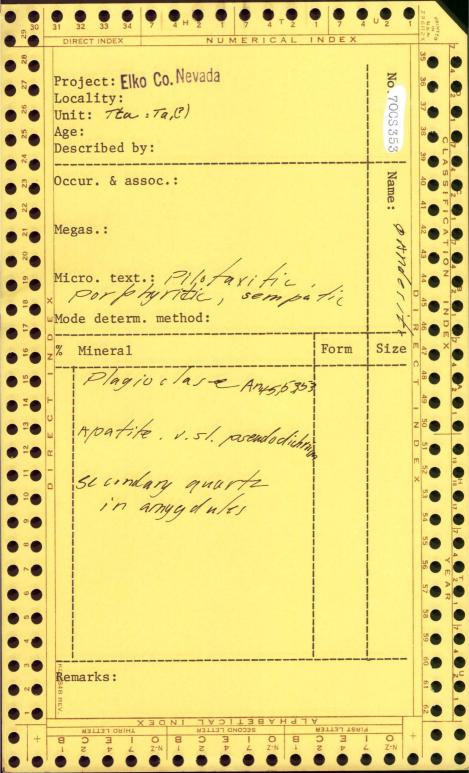
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mine, 16. Wilderness)
59 NC 142 protection Mine dung Mountain city protection Itime 63) LONC 54-52 Tennessee MAN Tungsten
Mine. 63/ 64NC 32 Mn-mont movillanite 65NC 17,18 66 NC 25 Gold Creek, My volma gant 66 NC 57 Azurite in one, Blue Sacket Mine 67 NC 2 cinnabar, metacinnabar, Berry (V. group (8 NC 51,52, pyrangynt, stephanite(?)

Ralion Mine Mt Blfzen Falcon Mm 8NC 176 Divide Mine 68NC177

190, stand Mh at in above [3107] pale by gellow by west mat w. many ineg vesteles & 2" some witho physul has max this know at extreme end secons to have doney up the red prous weath mat which de po stopped in 30 just as lithophysa / making drsappears.

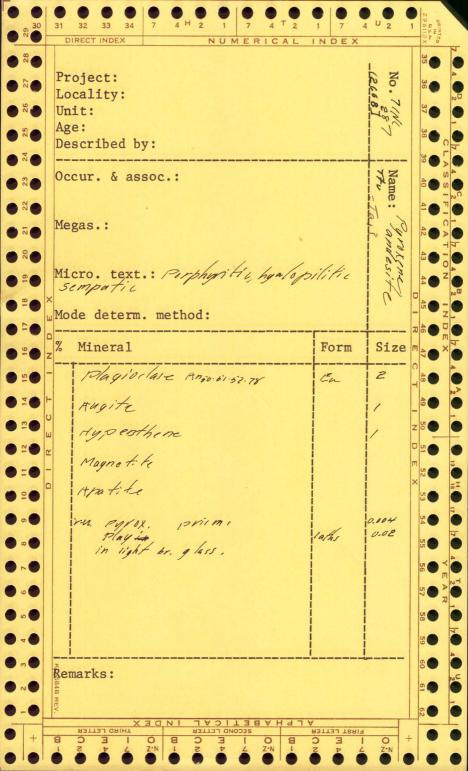


46 (b; 37, 26, 38, 28)



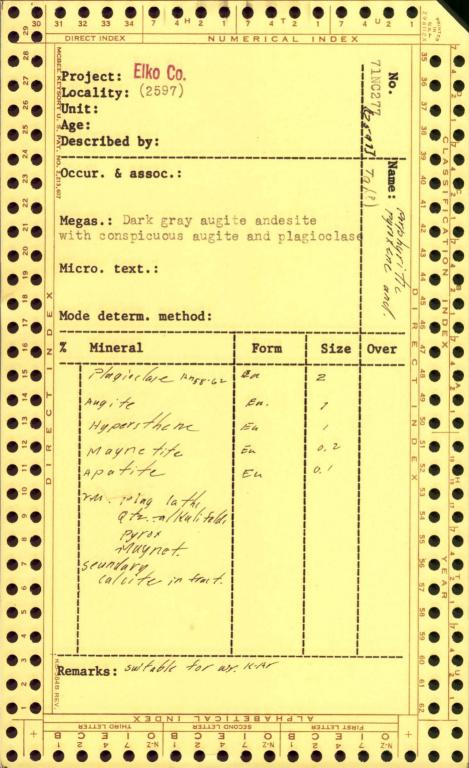
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Ab. 16: 38/2, 12, 27/2,21/20/, 30/1; 41/20/2, 30/1; 41/2, 20/2; 41/2; 41





16-66: 33,881; 36

Ta, Andesitic to la title Hows

and fomes. May include some ignimbrities

Travitst

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To carora (TEa)

Russell Gulch (Tw), Tar

Pacher Ranch undesite

Tuscarura andesite

Yanke & Bill (Tyb)

Tpc (Pie creek)

EASTERN ELKO CO. Qa (alluvium, lacustrine deposits) ents Ts (Mio., Plio. Pleistocene sedimentary rocks) Tw (Oligocene sedimentary rocks, Indian Wells fm.) Tso (Eo-Oligonere sedimentary rocks) Tb (Banbury Basalf) Top (Cougar Point Tuff) Ty (Jarbidge Rhyolite) the (ignimbale afficies?)

Ty (What Ranch and below Ty) at Stag Mtn.

Ty (Unnamed basic flows below Ty) at Stag Mtn.

Tyb (isolated basaffic flows 5. of Stag Mtn.) TVI (latite flows around Swales Mfn.) Tpr (Palisages Rhyolite) Tva (aphanitic basaltic flows - SE part of county) Tut (mixed bag of older flows - " " Tvd (toffs & flows of Dolly Varden Mts.)

Tap andesize perphyry frows — Leppy Rg.

Knc (Newank Cyn. Fm.)

Mz F (Frenchy Creek Volcanics) JR (Nugget Ss., Shinarump Cal., Chinle Fm. - Corrie area) R (Thaynes-Dinwoody Fm. - marine lower R) Park City Group - SE part of county) F956 PC -Pc - Carlin Cyn. sequence - W. pant of County) W. part.) - J. Pgp - Gerster-Phosphoria upper & NE part of county Pmp- Meade Peak middle Padr - Grandews Permian Pb1 - unnamed bioclastic 1st. Pp- Pequop Fm. (includes Arcturus Ss. in SE part middle Perm. of county). Penn.-Perm. Perm. Mdp- Diamond Peak Fm.

Mc- Chainman Sh. Egos DMpj - Pilot Sh. + Joanna Lst.

Ml - Sandy limestone (Kinderhook) transitional facies in NW part of county evonian limestone Devil's Gate & Guilmette Fm. Simonson & Sevy dolomites, Nevada Fm. Roberts Mtns. Fm. Lone Mountain Dol., Lake town Dol., Fish Haven Dol., (SO) Ely Springs Dol. - Dev. in Sulfur Spg. Rg. Jovician Cho- Hanson Creek Fm.

Oe- Eureka Quantzite Ego Op - Pogonip Lst. € - undiff. Cambrian strata Cpm- Prospect Mtn. gtzt. Cambrian - pt- McCoy Creek Fm. (Pilot Peak) cies allochthonous Paleozoic rocks. MORPHIC ROCKS (Ruby Rg., E. Humboldt Rg., Wood Hills, Pequop Mts.) diff. metamorphic rocks Darmanble (Guilmette - Devil's Gate) Dol. marble (OS) quantzite (Eureka 92t.) cc. marble (Op+E) gzt. (Prospect Mtn. gzt.) schist gneiss - Ruby Rg. : IGNEOUS ROCKS - unknown age - Testiany in - Jgd - gr intrusives granodiorite of Jurassic age
granite " " Cretaceous " " (Ruby Range) " Cretaceous " (" Jgr -Kgrpg - pegmatitic gneissic granite - Ruby Range

DESCRIPTION OF MAP UNITS

Qc COLLUVIUM, TALUS AND LANDSLIDE DEPOSITS (QUATERNARY)—Unsorted surficial material ranging from boulders through sand and gravel to silt and clay. Development of colluvium is strongly controlled by direction of exposure as the greater amount of vegetation on north-facing slopes favors accumulation. Coarse material at the upper end of mapped bodies forms talus and finer material is washed downslope and becomes colluvium. Poorly resistant formations such as airfall tuffs and non-welded igmimbrites commonly blanketed by colluvium over much of their extent. Landslides common on steeper slopes

Qa ALLUVIUM (QUATERNARY) -- Consists of sand, silt, and gravel along present stream courses. Maybe 2 m thick above normal stream in summer time, thicker alluvium may be present in some small valleys where rate of supply exceeds the transporting power of the stream

Qtg

Qgm

Qgo

TERRACE GRAVEL AND DISSECTED ALLUVIAL FANS (QUATERNARY)--Gravel accumulated on stream terraces higher than the present flood level. Thickness as much as 3 m

GLACIAL MORAINE (Quaternary) -- Boulders large to very large, angular. Material unsorted. Typical cross-valley ridge of terminal moraine. Present near south boundary of map area, on north side of Merritt Mountain. No striated boulders observed

GLACIAL OUTWASH (Quaternary) -- Present as valley train below morainal deposit. Distinguished from ordinary stream gravel by presence of boulders of a size beyond the carrying capacity of the present stream

- QT1s LANDSLIDES, ROCKSLIDES, AND EARTHFLOWS (Tertiary and Quatenary) —

 Unsorted boulders and finer material. Younger bodies have

 characteristic hummocky topography
- QTs*
 UNCONSOLIDATED SEDIMENTARY ROCKS (Quaternary and Tertiary)--Includes
 such material as alluvium, colluvium, talus, glacial moraine,
 glacial outwash
- COUGAR POINT WELDED TUFF (MIOCENE) -- Upper part of formation is Тср phenorhyolitic to phenodacitic ignimbrite, purplish gray to dark brown, or black where glassy, and ranging from compact vitrophyres to firable devitrified welded tuff. The tuff contains abundant phenocrysts of sanidine or anorthoclase, plagioclase and, in most quartz. Apatite, zircon and magnetite are common accessories. some of the compact vitrophyres, fayalite, and ferroaugite are present, the latter may be accompanied or proxied by ferropigeonite, very rarely by hypersthene and hornblende. In less compact welded tuff, fayalite is iddingsitized and pyroxene argillized. The groundmass range from wholly glassy to cryptocrystalline. A potassium-argon age determined (DKA-1068) on a sample of sanidine from near the base of the welded tuff section at Yellow rock in the Owyhee 15' quadrangle, by John Obradovich (oral commun.; 1965) gave a date of 12.2+0.8 m.y.
- Tcpv COUGAR POINT WELDED TUFF, VITROPHERE UNIT (MIOCENE) -- Ignimbrite vitrophere, locally separately mapped
- Tcpo COUGAR POINT WELDED TUFF, LOWER UNIT (MIOCENE) -- Ignimbrite similar to main part of Cougar Point Welded Tuff
- Tcpg COUGAR POINT WELDED TUFF, BASAL GRAVEL (MIOCENE)--Gravel, locally separately mapped

Tjt

JENNEY CREEK TUFF (MIOCENE) -- Rhyolitic air fall tuff and lapilli tuff, cream to buff, and dark carbonaceous tuff, locally with fossil leaves. Locally combined with Cougar Point Welded Tuff

Tjr

JARBIDGE RHYOLITE (MIOCENE)—Porphyritic rhyolite, with cryptocrystalline or glassy groundmass, locally spherulitic. Phenocrysts very abundant, include quartz up to 5 mm in diameter, sanidine phenocrysts somewhat smaller and less numerous, oligoclase similar in size but scarcer. Clinopyroxene recognizable in glassy phases only, and is generally pigeonite. Accessories include zircon, apatite, ilmentite, magnetite; very rarely topaz (which may be secondary) or pale pink garnet. Two K-Ar dates, one from Meadow Creek, in the Rowland quadrangle, of 16.8±0.5 m.y. (Coats, 1964, p. M11), the other from a basal vitrophyre in the Wildhorse quadrangle, of 15.4 m.y. (Evernden and others, 1964, p. 194). Total thickness may be 600 m

Twt

welded tuff and welded lapilli tuffs, phenorhyodacite to phenorheyolite. Phenocrysts include plagioclase and sanidine, commonly with quartz and/or ferroaugite, and rarely ferropigeonite. Contains coarse glassy lapilli, flow structure common. A few small bodies near west boundary of map area, north of Ditch Creek. K-Ar age determinations on plagioclase-sanidine composite grains from five different localities, four by John Obradovich (oral commun., 1966) and one by Richard Marvin (oral commun., 1967) gave ages ranging from 15+0.8 to 16+0.8 m.y.

SEVENTY SIX BASALT (MIOCENE)--Flows of porphyritic olivine basalt,

Tsb

EVENTY SIX BASALT (MIOCENE) -- Flows of porphyritic olivine basalt, with conspicuous clear phenocrysts of labradorite, up to 2 cm in

size, in a subophitic groundmass with plates of purplish augite including grains of olivine, labradorite, magnetite, ilmenite, and apatite. Local patches of mesostasis made up of biotite and sanidine. Locally interbedded with tuff, Tsbt

Tsbt

TUFF (MIOCENE)--Dull-greenish-gray, now nontronitic, with plagioclase crystals like those in flows, Tsb. Crystals of plagioclase from the tuff on Roughtop Mountain gave an age of 22.9±3 m.y. (J. C. von Essen, Menlo Park, Potassium-Argon age report 51, October 15, 1969). Tuffaceous sandstone made up of this basaltic material furnished horse ramins of Barstovian age (C. A., Repenning, oral commun., 1965). Possibly some of the tuff was reworked in Barstovian time; the earlier age given by the K-Ar determination is used here for the age of the volcanic rocks

Ts* SEVENTY SIX BASALT AND TUFF--Shown in cross sections

Tba

BIEROTH ANDESITE OF BUSHNELL (1967) (MIOCENE)--Biotite-hypersthene phenodacite welded tuff, with plentiful penocrysts of plagioclase, sanidine, brown biotite, nontronite after (?)hypersthene. Shard structure clear, but pectinate recrystallization common. Glassier phases may have olive-green hornblende and may lack sanidine and quartz. Type locality is at Bieroth Spring, near the western edge of the Rowland quadrangle. Present near southeast corner of map area

Tmb

MUSTANG BUTTE GRAVEL (OLIGOCENE) -- Chiefly coarse, poorly sorted boulder gravel, with angular fragments of granodiorite and of rocks derived from the Reservation Hill, Nelson, and Banner Formations.

Oligocene age established by K-Ar date on an interlayered welded tuff, described below. Locally, the unit may include some masses

of younger, possibly Miocene tuff and gravel

Tmwt MUSTANG BUTTE WELDED TUFF (OLIGOCENE) -- Phenodacite welded tuff containing phenocrysts of biotite, hornblende, quartz, oligoclase, and accessory zircon, apatite, and perrierite. Biotite from this bed was assigned an age of 38.0 m.y. by E. H. McKee (McKee and others, 1976, date no. 20). Interlayered with Mustang Butte Gravel in northeast part of map area

PHENODACITE AND PHENOANDESITE IGNIMBRITE OF SALMON SPRINGS (Eocene)—
Crystal—rich ignimbrite, generally devitrified, and relatively fine
grained, part contains phenocrysts of quartz, plagioclase (mostly
oligoclase), and biotite with local sanidine; another cooling unit
includes phenocrysts of plagioclase, biotite, green hornblende,
augite, and hypersthene. Present in northwest part of map area
around Alder Mountain. Rests on ignimbrite of Reed Creek, locally
overlain by gravel of Mustang Butte

PHENORHYODACITE IGNIMBRITE OF REED CREEK (Eocene)—Welded tuff with abundant phenocrysts, principally quartz, plagioclase, and biotite; locally with hornblende. Magnetite, apatite, and zircon common accessories. One sanidine and one biotite from separate localities gave an age of 39.6+2.0 m.y. (Eocene or Oligocene) by K-Ar analyses (John Obradovich, written commun., 1965, Lab nos. DKA-1073 and DKA-1070). Locally opalized, bleached, and iron stained

DACITE OF JONES CREEK (Eocene) -- Phenodacitie ignimbrite, compact to moderately compact, with conspicuous phenocrysts of plagioclase, augite, hypersthene, hornblende, and biotite, grading by increase of quartz and sanidine into a phenorhyodacite. Present near southwest corner of map area

Trc

Tjd

Tyb IGNIMBRITES OF YANKEE BILL SUMMIT (Eocene)—Welded phenoandesite and phenodacite tuff, ranging from light-brown to black dosemic to semihyaline, glassy constituents now partly crystallized with pectinate structures. Phenocrysts plagioclase, hypersthene, commonly augite, rare hornblende, and sparse biotite. Magnetite and apatite nearly ubiquitous. Present near southwest corner of map area

MICACEOUS IGNIMBRITE (Eocene)—Found only on west slope of Alder

Mountain, near northwest corner of map area. medium—gray

vitrophyric crystal—rich welded tuff, with marked fissility.

Phenocrysts consist of andesine (An₃₇₋₄₆), biotite, hornblende,

hypersthene, and augite with minor magnetite, quartz, apatite, and

zircon. About 20 m thick. Date of 43.5 m.y. determined on biotite

from tuff by John Obradovich (DKA-1074)

Tmg GRAVEL--(EOCENE)--Locally underlies Micaceous ignimbrite

Tsl PHENOANDESITE IGNIMBRITE OF SALMON CREEK (Eocene)--Light-gray to

light-brownish-red ignimbrite, sparse phenocryst include biotite,

plagioclase, and local hornblende with accessory magnetite,

apatite, and zircon. Mostly devitrified

Tab

T₁b

BIOTITE VITROPHYRE OF ALDER MOUNTAIN (EOCENE)—Vitricwelded tuff of similar composition to phenoandesite ignimbrite of Salmon Creek

PHENOANDESITIC BRECCIA (EOCENE)—Crumble breccia or mudflow of similar composition to phenoandesite of Salmon Creek

Kg GRANITE (IN THE BROAD SENSE ACCORDING TO STRECKEISEN, 1967)

(Cretaceous)--Includes granodiorite and quartz monzonite of previous usage. Generally contains both biotite and hornblende, locally contains perthitic orthoclase megacrysts. Includes

marginal microcline-microperthite aplite, locally separately mapped (Ka). Includes some pegmatite, locally separately mapped (Kp).

Also includes migmatitic zones adjacent to country rock locally separately mapped (Km).

Ka APLITE (CRETACEOUS) -- Microcline - microperthite aplite, marginal to Granite (Ka)

Kp PEGMATITE (CRETACEOUS) -- Related to Granite (Ka)

PPrh

Kmg MIGMATITE (CRETACEOUS)--Mixtures of Granite (Ka) and intruded country rocks

DIORITE, QUARTZ DIORITE, AND GRANODIORITE (Jurassic(?))--Diorite

consisting of andesine and hornblende, with accessory apatite and

sphene, secondary chlorite, clinozoisite, calcite, and sphene.

Hornblende partially recrystallized to pale-green actinolite. Unit

also includes hornblende-biotite quartz diorite and granodiorite.

A sample of biotite from the Enright Hill Stock (south-central prt

of map area) was dated by E. H. McKee (written commun., 1979) at

110.9+1 m.y. (Cretaceous). Metamorphism of this body and the

presence of adjacent Cretaceous intrusions suggest that this date

may be reset, therefore an age of Jurassic(?) is assigned

RESERVATION HILL FORMATION (PENNSYLVANIAN(?) AND PERMIAN (?))—Mostly fine grained dolomitic metasandstone and siltstone; pale gray, weathering white or pale reddish brown, in beds 2 cm to 5 cm thick, interbeded regularly with thinner beds of graphitic phyllite. The dolomitic meta-sandstone is composed of various combinations of quartz, calcite, tremolite, diopside, and wolastonite, the last locally coarsely prismatic. Also present are metagraywacke, micaceous and tremolitic quartzite, rare metachert, actinolite—

epidote-plagioclase schist derived from andesite and hornblende plagioclase schist. A few lenses of gray, siliceous dolomitic limestone, locally with coarse calcitic "eyes" suggesting former presence of crinoids

Mdc DIAMOND PEAK AND CHAINMAN FORMATIONS, UNDIVIDED (Mississippian)—

Present west and south of Enright Hill in the south-central jpart

of the map area. Sandstone, medium to coarse grained with some

conglomerate containing clasts of quaratz and chert. Locally

contains fossils, mostly brachiopods

Mc CHAINMAN FORMATION (MISSISSIPPIAN)—Forms the top of a sequence including; in descending order, the Nelson Banner, and Grossman formation, all of Mississippian age. Includes the Mountain City Formation (Coats, 1971). Largely quartz—muscovite biotite schist, locally with orhtoclase, garnet, or graphite, rarely with andalusite, wher thermally metamorphosed. Includes beds, of calcsilicate granulite up to 2 ft thick composed of quartz, calcite, diopside, tremolite, clinozoisite, and orthoclase. Contains a bed of quartz—plagioclase—orthoclase hornfels derived from rhyolite

Mct CHAINMAN FORMATION, TUFF (Mississippian) -- Present near southwest corner of map area. Rhyolitic to andesitic tuff

Mn NELSON FORMATION (MISSISSIPPIAN) -- Greenschist, locally amphibolite composition actinolite, chlorite, epidote, calcite, ilmenite, and relict andesine, in part altered to albite. Derived from flows, tuff breccias, and minor sills of andesitic and basaltic composition.

Includes on lens of rhyolitic tuff. At the base, locally an extrusive breccia, possibly a peperite, with limy matrix, loally

fossiliferons

Mb

Mg

Ov

Mnl NELSON FORMATION, LIMESTONE (MISSISSIPPIAN) -- Thin bedded limestone interbedded with greenschist as described above

BANNER FORMATION (MISSISSIPPIAN)--Soft massive bluish-gray limestone, containing solitary and colonial corals, brachiopods, and bryozoans. Grades downward through medium- to fine-grained brownish quartz arentie and gray tan-weathering siliceous siltstone through arenaceous limestone into conglomerate with rounded white quartzite boulders as much as 15 cm in diameter. Maximum thickness 200 m. Age: Osagian or Meramecian (mid-Mississippian)

GROSSMAN FORMATION (MISSISSIPPIAN(?))--Coarse conglomerate with clasts of gray quartzite, black chert, phyllite, and magnetitiferous siltstone, Sandstone, siltstone, and phyllite.

formerly regarded as Devonian or Mississippian, but presence of numerous clasts derived from the Valmy suggests that it is younger than the Antler Orogeny. It unconformably underlies the Banner formation

VAIMY FORMATION (ORDOVICIAN)—Micaceous quartz—calcarenite and calcareous sandstone, locally containing phyllocarid shells and small lenticular masses of thin—bedded chert with slaty partings, and ranging in color from light to dark gray, rarely black or grayish green; locally phosphatic or baritic. Also contains hard, well—bedded micaceous siltstone and black quartzose phyllite, and micaceous phyllitic limestone, locally phosphatic. Numerous irregular masses of quartz—albite—chlorite schist derived from andesite. Gray to black, locally tan, fine—grained with interlocking textures; rare detrital tourmaline and zircon and, in

the black quartzite, carbonaceous material interstitially and disseminated through the quartz grains

pvo

VAIMY FORMATION, QUARTZITE (ORDOVICIAN)--Gray to black, locally tan, fine-grained with interlocking textures; rare detrital tourmaline and zircon and, in the black quartzite, carbonaceous meterial interstitially and disseminated through the quartz grains

Branch of Pacific Mineral Resources 345 Middlefield Road Menlo Park, California 94025

February 26, 1970

Mr. J. G. Johnson Department of Geology Oregon State University Corvallis, Oregon 97331

Dear Mr. Johnson:

Regrettably, I cannot give you much information about the Devonian in Elko County. I have worked on the Devonian(?) rocks mapped by Decker, but had little better luck in finding fossils than he did—a trilobite that turned up last summer was not even generically identifiable, and could not be used to state with confidence that the formation (Van Duzer Limestone) was Devonian. I suspect that some of the western assemblage rocks in Elko County are Devonian, as is the case farther south, but fossils are very scarce, and lithologies are quite similar throughout the western assemblage, from Ordovician to Devonian. In short, I have no Devonian, only Devonian(?), and that is on Decker's map. The continuation of it is on my Owyhee quadrangle, now open-filed. Tom Mullens, who looked at this last summer with me, thinks that it is probably Ordovician, because of the lack of anything resembling the Roberts Mountains Formation in the column.

Sorry I cannot be of greater help.

Sincerely yours,

Robert R. Coats

cc: Dir. RF
ACG RF
Coats
MP RF

RRCoats/bls 2/26/70



OREGON STATE UNIVERSITY

DEPARTMENT OF GEOLOGY

February 23, 1970

Dr. Robert Coats
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

Dear Dr. Coats:

Roger Hope told me recently that you were working in the northwestern part of Elko Co., Nevada. I'm trying to complete an outcrop map of the Devonian of Nevada and Elko Co. is one of the last, incomplete areas. Is your work far enough along so that a map is available? Have you worked on any of the large swatch assigned to the Devonian by Decker?

Sincerely yours,

J. G. Johnson

bp

Memorandum

TO : Geologic Division Professional Personnel

DATE: February 14, 1972

FROM : Assistant Chief Geologist, Menlo Park

SUBJECT: Formation of a Menlo Center Scientific Instrument Committee for the Geologic Division

Depending on one's point of view, our profession is increasingly blessed, or cursed, with a proliferation of newly devised equipment and instrumental techniques designed to produce "old" kinds of data faster and/or more accurately, or to generate entirely new kinds of information. Much of this equipment is expensive to purchase, requires a high degree of technical skill to operate, and specialized knowledge to evaluate. In spite of these difficulties, various projects have been able to get in on some of the "new technology" action. However, as the center has grown and spread out, it has become increasingly difficult for individuals to remain aware of who has what equipment and its potential availability, if any, to other people at the Center. Accordingly, a Menlo Center Scientific Instrument Committee has been formed to collate, disseminate and evaluate information on equipment and generally improve upon our present utilization of laboratory instruments. Bob Luce, Brent Fabbi and Jim O'Neil have agreed to serve on this committee with Bob Luce serving as Chairman. Initially, they will try to get answers to the following questions:

- 1. What equipment is present at the Menlo Center that might be helpful to other projects?
- 2. How available is that equipment to other users?
- 3. What additional equipment should the Center try to obtain, possibly by pooling funds from various projects?
- 4. What equipment is available (at a price?) at nearby facilities such as Stanford Research or Ames?

This is a big undertaking and I urge that everyone cooperate with the committee to the fullest extent possible. Any helpful suggestions will be welcomed by the committee.

Robert E. Wallace

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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Branch of Field Geochemistry and Petrology 345 Middlefield Road, Mail Stop 18 Menlo Park, CA 94025

March 26, 1980

Prof. A. R. Philpotts
Dept. of Geology and Geophysics
University of Connecticutt
Storrs, Connecticutt 06268

Dear Tony,

Thanks very much for coming out to visit us. Several people made a special point of telling me how much they enjoyed your talks. I hope you also had a good field trip to the San Andreas Fault.

I've sent Bob Coats three rhyolite samples under separate cover. He suggests that you use the polished surface as one side of your thin section. His sample numbers are #53C96, 63CC7, and 53C88.

I have also sent one of my probe mounts from the Clear Lake Volcanics. The sample contains about 58-59% silica and is less than 45,000 years old. I thought I could see immiscible droplets in it, but since I'm not sure that I know what to look for, I'd very much appreciate it if you could confirm or deny their existence!

Thank you again, and I hope to see you at the next volcanology meeting.

Sincerely,

Julie Donnelly-Nolan U.S.G.S., MS/18 345 Middlefield Rd. Menlo Park, CA 94025 415/323-8111, x2334

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