

Branch of Western Mineral Resources  
Geologic Division  
345 Middlefield Road  
Menlo Park, California 94025

November 11, 1976

Mr. Rex H. Pilger, Jr.  
Department of Geological Sciences  
University of Southern California  
Los Angeles, California 90007

Dear Mr. Pilger:

I am writing to inquire whether your thesis on the geology of the northern Toano Range has been published yet, and if so, where and when. If not, could a copy be borrowed for the purposes of the Elko County report?

Dr. Hope utilized your mapping in the compilation of the map, but the factual information in the text may well prove most useful, and will, of course, be credited to you.

Sincerely yours,

Robert R. Coats  
Geologist

cc: Coats

RRCoats:rr

Department of Geology  
433 Morrill Hall  
University of Nebraska  
Lincoln, Nebraska 68508  
November 2, 1971

Mr. Roger Hope  
U. S. Geological Survey  
345 Middlefield Road  
Menlo Park, California

Dear Mr. Hope:

As you may recall, I wrote you in October, 1970 asking about mapping progress in the northern Toano Range. Since that time, for financial reasons, I have moved from the University of Washington to the University of Nebraska.

However, I have continued on the same project. Chuck Thorman suggested that I restrict the project to the Silver Zone Pass area, and interest in the pluton induced Bear Creek to provide aerial photos. I am now completing the project under Robert Nelson here at Nebraska, though I wish I could have continued under Peter Misch at Washington.

As you may know from your reconnaissance work, the area north of Silver Zone Pass is a penetratively deformed Cambrian sequence from Prospect Mountain to Upper Cambrian. It is overlain by a non-metamorphic allocthon which cuts the pluton. The pluton, as far as I can tell is post-penetrative deformation. Thus, if Coats' dates (1965) are correct, the metamorphism is Jurassic or older. I am still working on petrography of the metamorphics, to further determine the nature of the deformation. I hope to be able to put my map on a 7½ minute base if your topo division has such maps available by spring.

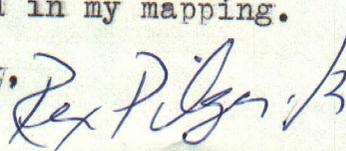
I've got a little fossil control on the metamorphics, deformed trilobites (Elrathia?) and some chitinous fragments which may be of value. The upper plate is mostly upper Cambrian--Ordovician, and perhaps Silurian. I may have Roberts Mountain in one block, but it's fairly well broken up.

The professors here at Nebraska (Nelson and Treves) are now involved in supervising all kinds of theses in White Pine and Elko Counties, and I wonder if you have a preliminary map of Elko County available yet? If so, I wonder if I could get a copy (let me know the price,) Also, I plan to complete my masters in May, if you are at all interested in my mapping.

Thank you.

Yours truly,

Rex  
Rex Pilger, Jr.



# Pilger

## Tertiary & Quaternary

fangl., siliceous volc. rtk., ss-sts tuff.

N. of Silver Zone Pass - sequence tilted against the range.

↓ 119' - fangl.  
↓ 47' - volcanics  
↓ 42' - ss-sts tuff

## Plutonic Rx

Toano Spring Pluton - gen. coarser-grained & more varied in composition than the Silver Zone Pass pluton. Also it's foliated & is grossly concordant to the country rock, in contrast to the Silver Zone Pass pluton, which is clearly discordant & mass. It has many pegmatitic phases, while the Silver Zone Pass pluton seems to be composed of one major phase, w/ lesser aplitic phases.

Both are granodioritic

Metamorphism of Epm - almost entirely synkinematic, development of Bt & Ms. Bt zone of greenschist facies.

Pioche shale - chlorite - grade regional metamorphism.

Thrusting post-dated at least the early intrusive stages. Later(?) thrusting emplaced non-metamorphic E rocks over the plutonic & metamorphic rocks (Epm & Ep)

265 So. Lucas, #19  
Los Angeles, CA 90026  
July 29, '72

Mr. Roger Hope  
USGS  
345 Middlefield Road  
Menlo Park, CA  
Dear Roger -

Here's the map. As you can see, it was put together fairly fast. You can thank the reproduction department of Shell oil for this copy, - but I really can't have them copy the thesis. I could have it copied at one of the commercial xerox places for about \$2.

The two plutons are, as I told you, very different, texturally. I'd call the northern (Toano Spring) Pluton "synkinematic" and "syn-regional metamorphism". While the south pluton (Silver Zone class P.) is "post-kinematic" (referring to the regional metamorphism and penetrative deformation) but probably ~~probably~~ three probably pre-thrusting, - clearly the "thrust" plates on the west flank are late - probably even some sort of landslide. The east flank plates are more fundamental, I think.

The fault separating the Prospect Mts from the

Pioche Shale is based on metamorphic grade contrasts and contrasts in deformation trends (also styles - though style, of course, is less diagnostic because of contrasting lithology)

Hope this will help you. As far as my strat calls are concerned - I'm very confident of them, all over the area.

Good luck.

Rex Pilger

114° 22.5'

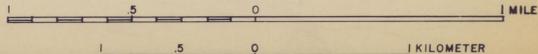
114° 15'



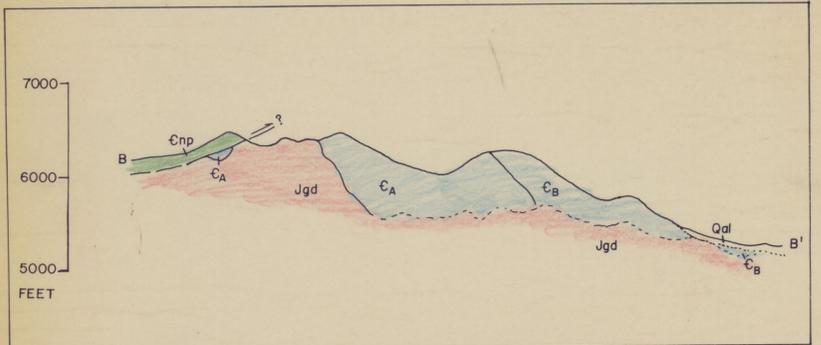
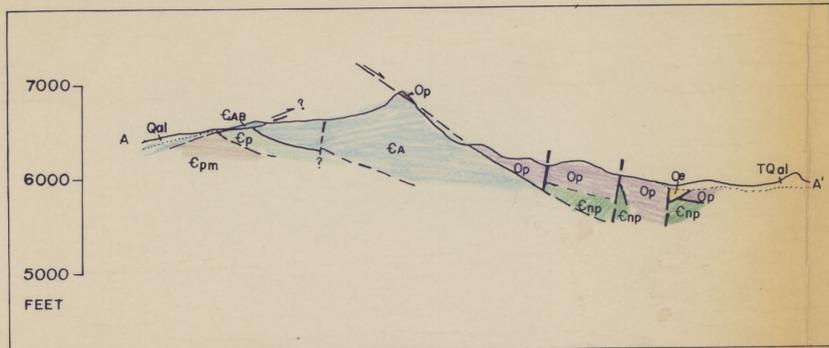
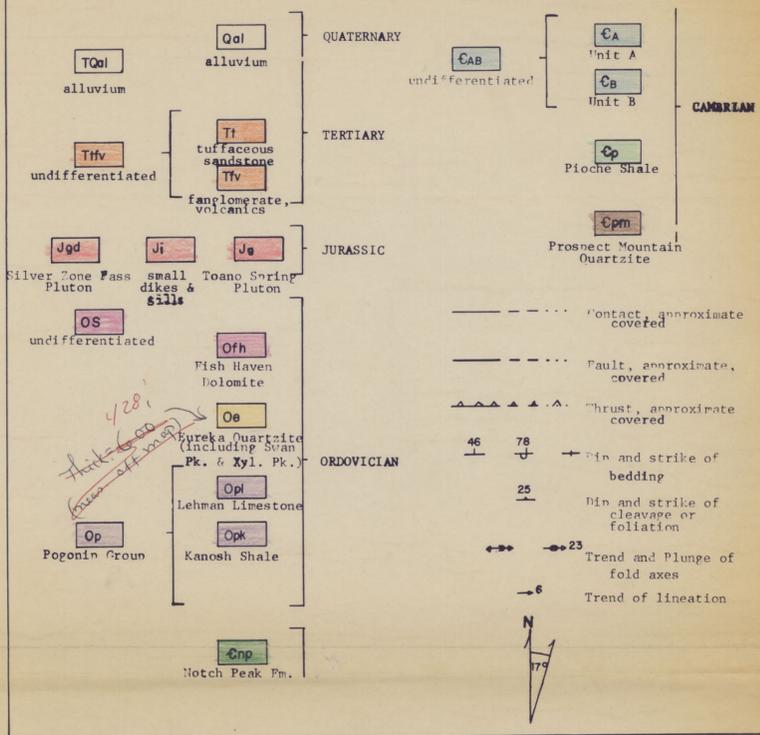
### GEOLOGY OF PART OF THE NORTHERN TOANO RANGE, NEVADA

BY REX PILGER, JR.

SCALE 1:24,000



CONTOUR INTERVAL 20 FEET



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