from NBMG OFR 83-9
See also 83-10 for geochemical results.

Between 115 + 70
Elko Co. General

Item 53

4710 0002

SWALES MOUNTAIN DISTRICT

The Swales Mountain district is located in the southern Independence Mountains about 15 miles north of Carlin. Most of the mines are located on the east slope of Swales Mountain, the southernmost peak of the Independence Mountains. Three barite mines located on the west flank of the range lie 3 to 4 miles west of the main district.

The mineralized zones at Swales Mountain are small and according to Smith, 1976, were never productive. However, judging from the size of the workings at the High Top claims, there may have been some minor production of gold or silver in the past. In 1973, two men were mining turquoise from cherts at the Edgar Turquoise mine (Mineral resource inventory of Elko Planning Units, Elko BLM report, NE9-4, 1976?). The mine is located about two miles southwest of the main district. During our examination of the district in August, 1982, little activity was noted other than recent staking and sampling.

The geology of the Swales Mountain area was mapped by the USGS in 1967 as part of a program to study the mineral potential of the area. The results of the study were later published by Evans and Ketner, 1971 and Ketner, et al, 1968. The geology is summarized as follows:

"At Swales Mountain these two diverse rock assemblages(siliceous western facies and carbonate eastern facies) have been juxtaposed by a thrust that postdates Early Mississippian limestone of the miogeosynclinal facies. The carbonate assemblage is exposed in a window through the thrust fault on the east side of Swales Mountain. The lowest strata exposed in the lower plate are tentatively assigned to the Silurian Roberts Mountains Formation. Along a secondary thrust fault, Devonian limestone has been thrust over the Silurian and Mississippian limestones. The upper plate of the main thrust consists of Ordovician chert and shale of the Vinini Formation. The Paleozoic sedimentary rocks and the thrust

faults have been folded and faulted and intruded by Tertiary monzonite porphyry and quartz porphyry. Tertiary latite flows, sandstone, and vitric tuff lie above the older rocks of the quadrangle. (Evans and Ketner, 1971)."

The main part of the Swales Mountain district is located in a lower plate window composed of dark-colored, silty limestones and minor sandy and shaley interbeds. The limestone units have been correlated with rocks exposed at the Carlin Gold mine, namely the Silurian Roberts Mountains Formation and the Devonian-Mississippian Popovich limestone (Ketner, et al, 1968). However, at Swales Mountain the Roberts Mountains Formation is more thickly bedded and does not display its characteristic fissility.

Intrusive rocks are abundant in the Swales Mountain area. The intrusives are composite bodies consisting of stocks, dikes, sills and shallow-level flows. Radiometric age dates from potassic minerals separated from the bodies range from 37-41 my, indicating they are of mid (?)-Tertiary age. Field relationships show that monzonite porphyry is the youngest rock type and intrudes bodies of quartz porphyry. The monzonite also cross-cuts thrust faults and high-angle faults in the area. Both the monzonite and quartz porphyries intrude lower and upper plate rocks.

At the minesites, the intrusive stocks form resistant, jointed, blocky outcrops. Near sample locations 1550 and 1570, quartz monzonite porphyry is weakly propylitized and contains clots and lenses of chlorite and epidote. In other areas, the monzonite is kaolinized or silicified and bleached. Feldspar phenocrysts are usually altered to clays and the matrix is generally iron-stained. Also, dikes of various composition are present at the minesites and may be directly related to the mineralization. At the High Top claims, a light-green colored, monzonite prophyry dike contains abundant fine-grained pyrite. The dike strikes N50W, is about 3' in exposed width and is directly adjacent to the mineralized zone. There is good

evidence that some of the dikes were intruded along pre-existing fault structures (Evans and Ketner, 1971).

The workings in the main district consist of clusters of small shafts, adits and prospects which are developed in limestone adjacent to the eastern and southern margin of a north-south elongate, monzonite porphyry stock. The ore deposits are typically vein-shaped skarn or gossan (replacement) zones which strike north or northwest and dip moderately to steeply to the west or southwest. The "veins" are several feet in width and generally conform with the bedding of the enclosing sediments. Most of the deposits occur within wider zones of silicated limestone. Some of the mineralized zones have sharp upper and lower contacts with unaltered or recrystallized, calcite veined limestone and therefore have a vein-shaped appearance. Well defined contacts between the veins and unaltered wallrock may be an indication that these deposits are structurally controlled by either bedding, fracturing, faulting or even host rock composition or porosity. Brecciated, copper-stained quartz vein from Gold Prospect # 1 indicates this deposit is fault related.

All of the ore zones contain clay gouge and abundant iron, manganese and copper oxides. Post-ore faults and fissures cut the mineralized zones at high angles.

The skarn at the minesites is composed of yellow-green garnet, pyroxene minerals, epidote and quartz. The samples are dense and often fractured. In some areas the skarn displays a sugary or marly appearance possibly inherited from a silty host rock. Chalcopyrite, pyrite and copper carbonates occur in clots, lenses and veinlets of all the skarn samples collected from the district. In addition to these minerals, the skarn contains minor scheelite (at the Gold Prospect # 1), bornite and specular hematite (at sample locations 1550 and 1570 .

Gossan is abundant on most of the dumps. It generally is vuggy, siliceous and displays box works. Some of the gossan samples contain remnant pods of sulfides

and vugs lined with hemimorphite.

Mineralized rock from the Swales Mountain area was sampled and analyzed by the USGS. The results from the study are published in USGS Circular 588. Their findings areas follows:

"A few samples from these areas contain as much as several tens of parts per million of gold, several hundred parts per million of silver, more than 100 parts per million of molybdenum, and thousands of parts per million of lead, zinc, and copper, but most samples are leaner (Ketner, et al, 1968)."

Core from three drill holes was analyzed for metals at regular intervals. The core rock showed some slightly anomalous horizons of gold (0.02-0.1 ppm), mercury, molybdenum and barium but in general their metal contents "are too low to be of any immediate significance" (Ketner, et al, 1968). Two of the holes were drilled in lower plate rocks and one began in the upper plate, intercepted the thrust zone and bottomed out in lower plate limestone.

Several small prospects and adits are located 1-2 miles southwest of the main district in upper plate rocks which are intruded by stocks and north-south dikes of quartz and monzonite porphyry. Alteration of the siliceous host rocks includes bleaching, fracturing, recrystallization and iron-staining. At the Bad Apple claims (section 6,T35N, R53E), altered mudstones of the Ordovician Vinini Formation contain small veinlets of malachite and fracture surfaces coated by copper and iron oxides. The porphyry at the minesite is altered, bleached and cut by random veinlets of "punky" iron and manganese oxides. The alteration of the intrusive rock ranges from kaolinitic to silicic. Below the workings there are several quartz porphyry dikes which form resistant, iron-stained outcrops. The USGS collected samples from this area which contain more than 10 ppm Mo, 70 ppm Ag and 1 ppm Au in addition to some Hg, Cu, Pb and minor Zn. (Ketner, et al, 1968).

The barite mines located west of the main district are developed in mudstones,

cherts and minor limestones of the Ordovician Vinini Formation. The barite is bedded and occurs in units approximately 10-20' in width. The units are usually conformable with the bedding of the host rcoks. Dikes and jasperoid are present locally. The most productive deposit is the Longshot mine (section 28, T35N, R52E) which showed renewed activity during a visit to the property in 1980 (Papke , in preparation).

Selected References:

Evans, J. G. and Ketner, K. B. (1971) Geologic map of the Swales Mountain quadrangle and part of the Adobe Summit quadrangle, Elko County, Nevada: USGS Map I-667.

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