

Snake Mountains Barite

Elko Co. General

Preliminary data by Keith G. Papke,
Nevada Bureau of Mines and Geology.
For BLM use only. *Item 60*

Name: Stormy Creek

Date of exam: 12/1980

Location: NW/4 S27, T42N, R61E. Access is from the northwest via Currant Creek.

Ownership: On private land owned by

Ore being produced by contract for Old Soldier Minerals.

Development: Open pit 120 m (400 ft) in diameter in canyon bottom; drilling
on canyon slopes to northwest and southeast.

Past production: . Active mine. Some of early production
was direct-shipping material but all is now jig product from
a plant near Currant Creek.

Type of Deposit: Bedded.

Geology: The barite occurs with chert and limestone of probable Ordovician age.
A quartzite unit crops out prominently a short distance southwest and
northwest and northwest of the mine. The rocks generally strike about
N30°W and dip 30° to 40°NE. The main barite bed is exposed only in
the pit area, and often poorly here; it is reported to range from 12
to 24 m (40 to 80 ft) in thickness and to average near 18 m (60 ft).
A limestone unit, probably a few meters thick, overlies the barite,
and a thinner and discontinuous limestone reportedly underlies it.
A second barite unit about 3 m (10 ft) thick is present in the upper,
eastern part of the pit.

The chert is grayish black due to abundance of organic material and it
often contains a small amount of pyrite. In the upper part of the pit,
the rock is weathered to a lighter color but secondary iron oxides are
not abundant. Much of the chert is sheared and locally it is severely
contacted. The limestone overlying the main barite unit is medium
gray; it contains some organic material and abundant pyrite in places
in streaks and grains. The contact with the barite is quite sharp
although some calcite veinlets are present in the nearby barite.

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Some thin chert beds are present in the barite unit, but in general they do not appear abundant. At the southeast edge of the pit, however, chert beds interfinger with barite, and pinch out abruptly. Neither the barite nor the limestone crop out in the northwestern wall of the pit. Instead a light-brown friable material, consisting of quartz and secondary iron oxides is present along the projected strike in a unit about 18 m (60 ft) thick which is underlain and overlain by chert. Probably this material is the weathering product of a pyrite-rich chert.

The barite-rich unit is very thin to thin bedded, and the material is medium dark gray, fine grained, fetic, and is abnormally rich in organic material. Veinlets of white barite are occasionally present. The barite contains a small amount of interstitial quartz.

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Name: Snoose Creek

Date of exam: 8/1979

Location: In the central part of S4, T40N, R62E

Ownership: On private land leased to Chromalloy American Corp.

Development: Shallow, irregular pit 120 to 150 m (400 to 500 ft) in diameter.

Drilling.

Past production: +25,000 to 100,000 tons. Active mine. Ore processed by
jigging or heavy-media separation.

Type of Deposit: Bedded.

Geology: The barite occurs with shale, chert, and limestone, part of a sequence mapped by Peterson (1968) as the Valmy Formation of Ordovician age. Reportedly the mine area is on the northwestern limb of a northeastward-plunging anticline. However, the rocks in this area show considerable variation in strike and dip, in which dips of 35° to 60° either northeast or northwest are most common. A thin, northwest trending dike, now mostly altered to sericite, intrudes the sedimentary rocks in the western part of the mine area.

The barite is very poorly exposed but seems to form a mass traceable for about 90 m (300 ft) long in an east-northeast direction and perhaps wide. Contacts of the barite with the sedimentary rocks appear to be very irregular. Some of the barite is brecciated along the southern edge of the barite mass, irregular and apparently discontinuous masses of limestone and replaced limestone are present in a zone up to 6 m (20 ft) wide. The material, which was not observed in contact with the barite, varies from medium-gray limestone to moderate-brown, fine-grained, porous material that now consists of quartz, barite, and sparse mica. A lesser amount of the replaced material consists of gossany iron oxides probably derived from pyrite-rich sulfides.

In the main mass the barite is medium dark gray, very fine grained, and fairly good quality. In a few places the barite is bleached to a very light gray color along fractures or contains thin veinlets of white barite. Only a small amount of gossany material is present and minor quartz was the only other impurity detected.

Some additional exploration was done 450 m (1500 ft) southeast of the pit area.

Reference. Peterson, B. L. (1968) Stratigraphy and structure of the Antelope Peak area, Snake Mountains, Elko County, northeastern Nevada: M.S. thesis, Univ. of Oregon. p.

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Name: Loomis Creek

Date of exam: 8/1979

Location: In the extreme southeastern part of S21, T41N, R62E

Ownership: On private property leased to Chromalloy American Corp.

Development: Shallow open pit 135 m (400 ft) long northwest and 45 m (150 ft) wide.

Past production: + 25,000 to 100,000 tons. Active mine. Ore processed by
jigging or heavy-media separation.

Type of Deposit: Bedded.

Geology: The barite occurs with black chert and shale, mapped by Gardner (1968) as the Ordovician Valmy Formation. Some greenstone also is present; the only outcrop observed is a quarter mile east and stratigraphically above the barite. The barite essentially forms a dip slope and is observed only in the pit; exposures are very poor. The rocks strike N35° to 55°W and dip 35° to 50°NE. Reportedly the principal barite unit is about 2.4 m (8 ft) thick and is underlain by 0.3 m (1 ft) of shale and then by 2.4 to 3.0 m (8 to 10 ft) of low- to very-low-grade barite. The low density of this material is partly due to interbedded chert and shale, but more so is due to the presence of very irregular masses up to 5 cm (2 in) across that make up as much as a fourth of the rock and are partly filled with porous gossany material or secondary barite. Hydrated iron oxides are abundant on fracture surfaces.

The principal barite unit has laminated to thin bedding and the material is dark gray to black where carbonaceous material is present, is very fine grained and emits hydrogen sulfide when struck with a hammer. A few brachiopods replaced by barite occur, as does a minor amount of spheroidal material. Iron oxides as gossany material or stain is generally much less abundant. Black carbonaceous layers are common

and this material is rich in mica with 2 M polymorph and quartz, with disseminated pyrite present locally. The upper part of the unit is characterized by abundant yellowish-brown iron oxides on fracture surfaces; the hanging wall of the barite is not exposed.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada: Ph.D. thesis, Univ. of Oregon, 222p.

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Name: Little Dry

Date of exam: 8/1979

Location: NW/4 S21,T42N,R62E

Ownership: On the Little Dry claim located in March 1973 by Martin R. Saunders,
Laurine P. Saunders and Roberta Kitchen; now controlled by
Chromalloy American Corp.

Development: A single north-south pit 60 m (200 ft) long that averages about
15 m (50 ft) wide and 4.5 m (15 ft) deep. Several exploration
trenches nearby.

Past production: +1,000 to 25,000 tons. Inactive.

Type of Deposit: Bedded.

Geology: Rocks in the pit area are black chert, poorly sorted pebble-cobble
conglomerate, shale, and minor chert pebble conglomerate, limestone,
and sandstone; similar rocks in the vicinity were mapped by Gardner
(1968) as the Ordovician Valmy Formation. The rocks' strike N5° to
15°E. Dips are more variable, ranging from 50° to 90°, but commonly
are plus 70° east or west. The main barite bed is mostly concealed
in the pit floor. Widths of about 5 m (16 ft) and 2.5 m (8 ft) were
measured in two places, but there was no indication whether or not
barite was continuous over these distances. Some faulting, both low
and high angle, were observed. Contacts of barite with the essentially
unaltered adjacent rock are sharp, but locally crosscutting, and both
the barite and the adjacent rock is brecciated in a few places. The
barite is very thin to thin bedded, medium dark grey, and fine grained.
East of the main bed, in the southeastern part of the open pit, a
0.9 m (3 ft) bed of barite is exposed. Thin material contains very
abundant grayish-brown, porous, gossany iron oxides. A minor amount
of unreplaced chert is present in the bed.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern
of the Snake Mountains, Elko County, Nevada: Ph.D. thesis,
Univ. of Oregon. 222p

Name: Jungle A

Date of exam: 8/1979

Location: SW/4 SW/4^{Sec 8}, T42N, R62E and extending into section to south.

Ownership: On Jungle No. 3 patented claim, located in October 1955 by H. L.

Butler, Edith V. Butler, and M. R. Saunders, patented in _____, and
now owned by Chromalloy American Corp.

Development: Development in area 120 by 10 m (400 by 200 ft) northwest-southwest,
with small pits near the ends.

Past production: + 1,000 to 25,000 tons. Semi-active mine.

Type of Deposit: Bedded.

Geology: The barite occurs in a sequence of chert, shale, and chert pebble conglomerate, a group of rocks mapped by Gardner (1968) as the Valmy Formation of Ordovician age. The rocks strike N40°W and dip 45° to 25°N. Chert and shale in the footwall are somewhat contorted; they are slightly altered and iron stained and locally contain some gossany material that probably was derived from pyrite-rich sulfides. Slightly kaolinized chert pebble conglomerate forms the hanging wall of the barite unit. Although the contact is not well exposed, it appears to channel down into the barite unit and very locally to almost cut through it. Barite was not identified in the altered conglomerate. A short distance northwest of the mine, the conglomerate is unaltered and contains a variable amount of chert pebbles of several colors in a chert matrix. The chert pebbles are subangular and have a usual maximum diameter of 30 mm (1.2 in).

The barite unit is conformable to the bedding of the adjacent rocks, except for the channeling noted above. Apparently the same unit is present at the Jungle Mine 700 m (2400 ft) west-northwest and at the Consolation-Boies Mine 600 m (2000 ft) west-southwest, but the unit cannot be traced continuously on the surface around the canyon to these mines.

In this area the barite unit is estimated to be 4.5 m (15 ft), but the thickness is variable due to the irregular upper contact. The lower contact is sharp and distant. Several thin beds of broken chert are present in the unit as are a few very thin layers of shale. The barite has very-thin to thin, waving bedding, and is dark gray and fine grained. It is quite pure except for minor quartz and some iron oxide as stain and in a few very small masses with porous gossany material.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada: Ph.D. thesis, Univ. of Oregon, 222p.

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Name: Jungle

Date of exam: 8/1979

Location: South-central part of the SE/4 S7, T42N, R62E.

Ownership: On the Jungle Nos. 1 and 2 patented claims, located in August 1955 by H. L. Butler, and M. R. Saunders, patented in _____, and now owned by Chromalloy American Corp.

Development: Open pit about 120 m (400 ft) in diameter with maximum depth of 15 m (50 ft). Some exploratory drilling.

Past production: Semiactive. 25,000 to 100,000 tons. Active mine. Ore processed by jigging or heavy-media separation.

Type of Deposit: Bedded.

Geology: The barite is associated with black chert and argillite, shale, and chert pebble conglomerate, a sequence mapped by Gardner (1968) as the Valmy Formation of Ordovician age. Generally the rocks dip northwest to west at low angles, but some steeping to about 30° and local reversals of direction of dip were noted. Variation in the elevation of the pit floor by as much as 6 m (20 ft) indicate that the lower contact of the barite is very irregular; this irregularity probably is due to both folding and faulting.

The best exposures are in the west face in the pit. The upper part of the face is predominantly chert with some 0.3 m (1 ft) beds of chert conglomerate; the rocks are little altered or iron stained. Starting about 3 m (10 ft) above the barite contact, more shale and conglomerate are present, the rocks are more broken and bedding is less distinct. The barite unit, exposed in the lower part of the face, has irregular and poorly defined contacts. Part of the irregularity of the upper contact appears to be due in part to channeling of an overlying chert conglomerate, but some of the contacts are

faults. In places the conglomerate is considerably altered and iron stained, but barite was not found in the rock. In one place barite and conglomerate appear to interfinger over a horizontal distance of 6 m (20 ft).

The barite unit varies considerably in thickness, ranging from 3 m (10 ft) to perhaps 9 m (30 ft). Shale beds, mostly less than 0.3 m (1 ft) thick, are present, and in places non-barite material is a serious contaminant.

The footwall rocks are fresh to slightly altered chert and argillite. Block carbonates material is abundant along parting surfaces in some of these rocks.

The barite is very-thin- to thin-bedded, dark gray, and very fine grained. Carbonaceous material is abundant along some layers, and pyrite occurs in places in grains or in clusters of grains aligned parallel to bedding. The barite has a fetid odor when pulverized. Quartz is a minor contaminant, and sparse iron oxides occur as stain or in small masses of gossan. Very locally the barite is bleached to a light-gray color or cut by white barite veinlets.

References: Gardner, D. H. (1968). Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada: Ph.D. thesis, Univ. of Oregon, 222p.

Name: Hunch

Date of exam: 8/1979

Location: SE/4 SE/4 S17, T42N, R62E

Ownership: On Hunch group of claims, the first of which was located in June 1978 by C. R. Davis, Dennis W. Tate, and Thomas E. Bilbao; leased to Chromalloy American Corp.

Development: Open pit 120 m (400 ft) long N75°W, averaging 20 m (70 ft) wide and 6 m (20 ft) deep.

Past production: +1,000 to 25,000 tons. Active mine. Ore processed by jigging or heavy-media separation.

Type of Deposit: Bedded.

Geology: The barite occurs in rocks mapped by Gardner (1968) as the Valmy Formation of Ordovician age. In the mine area these rocks are chert, shale, and very subordinate chert pebble conglomerate which strike northwestward and dip 40° to 60° NE. Faulting nearly parallel to bedding is common and this and less extensive high-angle faulting have brecciated the rocks and partly destroyed bedding in both the barite and adjacent rocks. The lower 6 m (20 ft) of the hanging-wall rocks appears to be slightly altered as compared to those rocks higher in the section.

The barite cropped out originally, and the south wall of the open pit essentially follows the footwall contact. Most of the barite unit is concealed in the floor of the active pit; the footwall contact is exposed only in one place, and the hanging-wall contact is not exposed. The barite unit is estimated to be 7.5 m (25 ft) thick. Little of the lower 4.5 m (15 ft) is exposed, but this appears to be mostly barite with a few 5 to 15 cm (2 to 6 inch), discontinuous beds of shale.

This is overlain by about 1.8 m (6 ft) of extensively brecciated barite

and chert with very abundant hydrated iron oxides in small gossany masses and as surface stain. The upper 1.2 m (4 ft) exposed is purer and better bedded, but contains some thin shale beds and iron oxides. a grayish-brown, iron-oxide rich material apparently marks the hanging-wall contact.

The barite is medium gray, and fine grained. Minor quartz of iron stain are impurities. In a few specimens cracks have developed perpendicular to bedding; these cracks typically are 25 by .2 mm (), curved, and often are lined with barite crystals.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada: Ph.D. thesis, Univ. of Oregon, 222p.

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Name: Consolation-Botes

Date of exam: 8/1979

Location: NE/4 S18, T42N, R62E

Ownership: Partly on Consolation group of claims, located in March 1973 by Martin R. and Laurine R. Sanders and Roberta Kitchen; partly on leased private land. All is controlled by Chromalloy American Corp.

Development: Stripping done around flank of a hill, on the outer side of area 240 to 300 m (800 to 1000 ft) in diameter. Barite came from 60 m (200 ft) long pit on north side and, to lesser extent, to a filled pit on the south side.

Past production: Active mine. +25,000 to 100,000 tons. Ore processed by jigging or heavy-media separation.

Type of Deposit: Bedded.

Geology: The barite occurs with chert, shale, argillite, and chert conglomerate. A sequence mapped by Gardner (1968) as the Valmy Formation of Ordovician age. Black carbonaceous layers are abundant in the barite and are present locally in the other rocks. The bedding in the sedimentary rocks are mostly flat lying but has local distortions. The barite unit appears to be the same one as at the Jungle and Jungle A area, which are at nearly the same elevation on the north side of the canyon. The sedimentary rocks are partly broken, with destruction of bedding, but they are relatively little stained by iron oxides and are essentially unaltered. Pyrite is present in disseminated grains and streaks in the barite and also, locally, in the other rocks. The barite is seldom exposed, but its occurrence at elevations as much as 6 to 9 m (20 to 30 ft) indicate some distortion by folding or perhaps faulting. The thickness of the barite unit is unknown, but reportedly is about 6 m (20 ft).

The barite is laminated to very thin bedded. The material is dark gray, fine grained, and contains abundant hydrogen sulfide. Black carbonaceous layers are conspicuous due to a tendency to split along these planes. Pyrite is sparsely present and minor quartz was the only other impurity detected.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada. Ph.D. thesis, University of Oregon, 222p.

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Name: A and L

Date of exam: 8/1979

Location: E/2 S9, T41N, R62E

Ownership: On the A & L claims located in July 1972 by John Ala and Norman Ludwig, and now controlled by Chromalloy American Corp.

Development: Two small open pits; exploration by shallow trenching and drilling in about four other areas.

Plst production: +1,000 to 25,000 tons. Inactive.

Type of Deposit: Bedded.

Geology: Barite occurs in chert, chert conglomerate and shale in a sequence of rocks mapped by Gardner (1968) as part of the Valmy Formation of Ordovician age. At a shallow open pit measuring 30 by 15 m (100 by 50 ft), in the NE/4 SE/4, chert and conglomerate strike about N20°E and dip steeply east and west. The host rocks are slightly iron stained but are essentially unaltered. At a second small pit, in the NW/4 NE/4, barite occurs in nearby horizontal black chert and gray shale. The barite is not sufficiently exposed in either pit to determine its geologic occurrence or size.

The barite is medium dark gray, fine-grained. Impurities are minor quartz, and minor iron oxides that occur a stain and gossan. Some of the barite contains small spheroids.

References: Gardner, D. H. (1968) Structure and stratigraphy of the northern part of the Snake Mountains, Elko County, Nevada: Ph.D. thesis, Univ. of Oregon, 222p.