1900 0030 Galena

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JAY A. CARPENTER, DIRECTOR

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1945

REPORT ON CERTAIN CLAIMS IN THE GALENA DISTRICT FOR THE ALLIED MINES AND EXPLORATION COMPANY

The claims under option to the Allied Mines and Exploration Company, in the Galena district, are about two miles west of Steamboat Springs and one mile south of the Mt. Rose highway. I was told by Mr. Maloney, Secretary & Treasurer, of the Allied Mines and Exploration Company that there are 20 claims in the group one of which is patented. However, most of the claim corners have been destroyed.

I examined the property on July 18, 1945 at the request of Jay A. Carpenter, Director of the Nevada State Bureau of Mines. Mr. Maloney of the Allied Mines and Exploration Company accompanied me and pointed out places from which ore was said to have been taken when the property was formerly worked.

The ore zone containing lead, silver, and zinc strikes about N 80 E and lies on the top of an east-west ridge or spur from the Sierra Nevada Mountains, at an elevation of approximately 6000 feet. The claims extend down both slopes, furnishing suitable tunnel sites. To the south there is a difference in vertical elevation of over 1200 feet between the level of the V & T Railroad bed and the top of the ridge, and a horizontal distance of about 4000 feet.

A passable road, from the Mt. Rose highway, leads to the north end of the property about 1000 feet horizontally from the old workings on top

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of the ridge and 400 feet vertically below them. There is an old road leading to the west edge of the workings along the top of the ridge from the northwest. It follows closely the contour of the hill, and although it is now impassable might be reopened more cheaply than the cost of construction of the extension of the other road.

The country rock in the mineralized area is a hard, fine-grained hornfels, which was originally shale with some interbedded dolomite or limestone. The metamorphism was caused by a granodiorite intrusion, a portion of which is exposed on the north slope of the ridge. The intrusive is also undoubtedly the source of the mineralization.

The ore zone strikes approximately 80 degrees east of north, and is divided into the "west" and "east" ore zones, because an andesite flow covers the middle portion for a distance of approximately 1000 feet. The two ore zones are probably on the same fracture system but because of the andesite covering it cannot be positively stated.

The west ore zone displays no prominent fissures or veins, the east-west trend being apparent by the location of the several prospect holes, and by a yellow cellular oxidized rock which is often exposed on the surface between the caved workings, and also on some of the old dumps. This cellular rock which varies in width from a few inches to about two feet often contains cerussite (lead carbonate), and is found in both the west and east ore zones. The yellowish color is iron sulfate,

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and no arsenic or antimony were detected. While the ore zone apparently strikes east-west, the ore solutions appear, in at least two instances in the west zone, to have penetrated the rock along what are apparently bedding planes in the hornfels striking about north--south. A few small crystals of disseminated galena were detected in the hard hornfels at the edge of a caved shaft on the west end, but it assayed only a trace. The rock is very hard and is not easily fractured or replaced and I noticed no indication of brecciation. In the east end a more pronounced fissure is visible and is exposed, here and there, longitudinally for about 400 feet. Near the west side of the east zone there is a considerable amount of manganese and iron oxides lying along the north side of the fissure for about 75 feet. A five foot cut of this material exposed in a pit assayed 10.4% lead. The true dip of the fissure is not apparent on the surface as in short distances it will change from north dipping to south dipping.

The caved remains of several trenches and shafts are scattered along the fissure zone, but none of the shaft dumps indicate a depth of more than 50 feet was attained. On the north slope of the ridge, north of the west zone, three tunnels have been started, but the portals are now caved. Ore with a fairly large dump was said by Mr. Maloney to be 900 feet long and trending to the southeast to cut the dip extension of the east zone. But until the true dip of the fissure is

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determined it is not possible to calculate the remaining distance to be driven. The other two tunnels were apparently driven to cut the west zone.

The lead values at the surface are primarily cerussite (lead carbonate) representing a supergene enrichment, but which in all probability extends only to shallow depth. Galena, the primary lead sulfide ore, does not react readily with acid solutions as do copper or zinc sulfides and hence as a rule only very shallow enriched zones of lead are found. There is no reason to suspect a secondarily enriched lead zone at depth of any higher grade than the ore at the surface as the sulfide ore on alteration first alters to a sulfate, more or less remaining in place, and then quickly, either on contact with carbonate rocks or by a reaction with the CO_2 in meteoric waters, changes to a more stable carbonate, remaining very close to the surface. As erosion proceeds much of this ore is eroded away rather than going into solution to be reprecipitated at depth as is so common with copper ores. Likewise the tenor of the ore on reaching the primary zone might drop below that of the ore at the surface where some secondary enrichment has taken place.

Neither is it likely that the silver content will be as high in the primary zone as in the oxidized zone, because there will undoubtedly be a more pronounced silver enrichment than lead, due to its greater

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solubility. However, as the argentite in lead-silver ores is often locked up within the galena as very fine disseminated particles they may not have access to oxidizing solutions unless the galena is also affected.

There is a probability of encountering greater zinc values at depth. Although the east zone is referred to, by Mr. Maloney, as the "zinc orebody" and the west exposure as the "lead orebody", the samples taken on the surface croppings showed less than one percent zinc, with the highest coming from the west zone. Mr. Maloney said he was told by the owner of the property that when sinking on the ore the zinc values increased to the point where the ore was penalized by the lead smelter. If so, this would mean that the rock contains zinc, but that it has been leached from the surface oxidized zone, which is to be expected, I see little chance for any secondary enrichment at depth as zinc, in solution, very seldom precipitates unless in contact with carbonate rocks, and while part of the hornfels represent original carbonaceous sediments, the carbonates were replaced by silicates during the process of metamorphism. The presence of zinc as indicated makes it entirely probable that there might be zinc values in the primary ore, but of what grade I could not say.

It is difficult to obtain representative samples of the rock because of the caved condition of the old diggings, and the rock debris

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covering the surface. On the west side however a few cuts were made 3 or 4 years ago by a bulldozer so that the bedrock is better exposed.

Seven samples from the east zone gave results as follows:*

	Au	Ag	Pb	Zn
#1 A one foot cut in hornfels at west end of east ore zone. Taken in an old pit on the south side of the fissure	.0.005	1.0	0.4	None
#2 A five foot cut on north side of cut from #1 sample. Much Mn. and Fe. oxide. The Mn. must be carefully removed in an analysis or will indicate a Zn. reaction.	0.01	4.5	10.4	0.9
#3 Small ore dump by caved shaft 250 feet east of samples 1 & 2. The area between covered and could not sample. The cellular rock . .	0.005	1.3	10.6	
#4 From dump of inaccessible shaft 40 feet east of #3	0.005	0.2	trace	none
#5 Blocky hornfels 50 feet east of #4	N o n e			
#6 A three foot cut south side of pit 40 feet east of #5	0.005	0.3	none	
#7 A three foot cut to north of #6 in same pit	0.005	1.9	3.8	trace

This area is approximately 400 feet long, being covered at both ends by volcanics. It is separated on the surface from the west zone by about 1000 feet of andesite.

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*Analysis by Wm. I. Smyth, Analyst, Nevada State Analytical Laboratory.

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Seven samples from the west zone gave results as follows:

	Au	Ag	Pb	Zn
#8 Blocky hornfels in side of caved "Galena tunnel" at west end of west zone		N o n e		
#9 Blocky hornfels in bottom at portal of "Galena tunnel". A 6 foot cut across bottom where the mineralization appears to be concentrated by apparent bedding planes in hornfels.	0.005	2.9	7.5	
#10 A 3 foot cut normal to bedding at south end of trench called the "best ore". 100 feet east of #9 .	0.003	2.8	12.6	
#11 Dump of approximately 200 tons in front of this cut (#10) although part of rock may have come from a caved shaft 30 feet east of cut .	0.005	2.4	5.9	
#12 An 8 foot cut on south side of caved shaft 30 feet east of #10. Traces of disseminated galena in hornfels	none	none	trace	
#13 10 foot sample in bulldozer cut 130 feet east of $10	trace	0.3	trace	
#14 A two foot cut across yellow cellular rock 30 feet east of #13	0.01	1.3	8.9	1.2

The west ore zone is exposed for a distance of approximately 300 feet and covered by lava at both ends.

Lead and zinc in the sulfide mineral can be economically separated from each other by flotation, but considerable difficulty is encountered on attempting

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to separate the oxidized minerals of lead and zinc, so that a low zinc content in carbonate lead ore of shipping grade avoids a penalty charge.

The presence of gold, silver, lead, and zinc over a considerable linear extent in the surface outcrop justifies further exploration work in opening up the old surface workings to allow more thorough sampling and study; and to reopen the tunnels to ascertain if primary ore is in evidence and if the zinc content has materially increased.

Fred L. Humphrey

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Nevada State Bureau of Mines.