FORM 396 12-36 2M

WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

January 9. 1937

Mr. Tom Lyon
818 Kearns Building
Salt Lake City, Utah

Dear Sir:

Please find enclosed the geological sketches for development during the month of December, and also the January 1st sheet for addition to the operating ore reserve. I did not include a sketch of 706 Shaft for the advance was small and the formation is still the typical dark schist with small stringers of ore.

1017 DN has been driven quite a distance without a cross-cut to the hanging wall, but one is to be started within the next day or two.

We have resumed mining several stopes that operated at a loss when copper was lower. The addition of these blocks to the Operating Ore Reserve has kept our available ore above the 800,000 ton mark, and there is an additional tonnage yet available if mining costs can be kept within certain limits. However, we are mining more ore than we are developing but may be able to keep this figure constant if we are able to develop some ore on the 1100 level within the next few months.

I had a good vacation trip around Southern California, and am just about caught up with my work again.

Best personal regards,

Seth K. Dromboy.

SKD
W

BRIEF DESCRIPTION OF MINE AND PLANT OF THE WALKER MINING COMPANY

The mine is located in the Sierra Nevada snow belt in Plumas County, California at an elevation of 6200 to 7500 feet. It is connected with the Western Pacific R.R. at Portola, 27 miles by a good dirt road. This road connects with the North Fork Highway 4 miles east of Portola. The mine is served by a 9 mile aerial tram, connecting with the Western Pacific R.R. at Spring Garden, over which all supplies and concentrates are shipped.

The ore occurs in wide shear zones in schist dipping from 35° to 60° east. The vein filling is quartz and mineralized schist ranging up to 80 feet wide. The principal mineral is chalcopyrite with gold and silver.

The ore is mined by the shrinkage method except for one high grade ore body in heavy ground which is mined by the square set method. Drilling is done by compressed air machines. The broken ore is drawn into 3-1/2 ton cars from chutes, and transported by electric trolley locomotives through a 2 mile haulage tunnel to the crude ore bin. The ore is mined for a distance of 1300 feet above this level, and another haulage level has been cut 500 feet below this level and is served by three winzes. The mine is capable of producing 2000 tons of ore per day.

The mill is of the stage crushing type, steel construction.

The ore is dumped from 3-1/2 ton side dump cars over 10" grizzleys fed by a pan conveyor to a 15 x 24 all steel jaw crusher, and reduced to 3" size. This material is elevated by a conveyor to the secondary crush where it passes over a grizzley to 2-8 x 15 crushers, to an elevator, to a 2" circular mesh trommel, the oversize to a set of 54 x 24 rolls to an elevator, to a 1" circular mesh trommel, the oversize to a set of 54 x 24 rolls, the finished product, passing 1" circular mesh, is conveyed by belt conveyor to a 2800 ton bin from which it is fed to the ball mills by short belt conveyors. The ball mills are of the marcy type- 3- 75-S and 1-77. Each mill is in closed circuit with a duplex Dorr classifier 23 ft. long. The ore is crushed 94% - 48 mesh. This product flows to flotation machines of the Callow type. The concentrates flow to 2 Dorr Thickeners, and the overflow from these thickeners flows to a third thickener for further thickening. The thickened concentrates are elevated, and dewatered by an 8 x 12 Oliver filter, the concentrates falling on a belt conveyor which discharges into a concentrates bin, from which it is drawn into the tram buckets of 800 pounds net capacity, which, after a 9 mile trip over mountains and valleys taking nearly 2 hours, dump directly into gondolas at Spring Garden.

Both mine and plant are electrically operated, power being served by the Pacific Gas & Elec. Co. at 23,000 volts.

At the portal the mine is equipped with framing sheds, steel shop to handle 2000 pieces of steel or better, complete machine shop for building and repairing cars and all other equipment;

and a compressor plant with piston displacement of 3400 cu. ft. Also, 2 miles distant, at the top of a raise from the end of the haulage level, is a power house housing a compressor of 1750 cu. ft. piston displacement, hoist, motor generator set, and other electrical equipment.

The camp contains bunkhouses for 250 men and dwellings for more than 100 families, store, schoolhouse, boarding house, etc.

Ownership consists of 15 patented claims of 297.573 acres, camp site of 108.22 acres, patented by exchange of land, 24 claims of about 473 acres, patent applied for, and 272 claims of approximately 5000 acres held by possessory right. The International Smelting Co. owns 50.4% of the stock.

Calif

615 '23

AIR MAIL

Salt Lake City, Utah
May 1, 1935

Mr. C. F. Kelley, President
Anaconda Copper Mining Company
25 Broadway
New York City, N. Y.

Dear Sir:

The Walker Mining Company owns mining claims in Plumas County, California, consisting of 34 patented and 262 unpatented claims covering approximately 5726.71 acres. In addition the Company owns 103.22 acres of patented lands used for a mill and tunnel site.

The mineral deposits of the Walker mine contain copper, gold and silver. The ore bodies occur in a northwest-striking and easterly-dipping complex fissure zone which has been developed along its course for more than 7200 feet. The vein is from 10 to 90 feet wide and the general average width of ore as stoped is approximately 30 feet. The principal vein minerals are quartz, pyrite, pyrrhotite and chalcopyrite.

The mine is operated through a 3050 foot crosscut tunnel leading from the mine workings to the milling plant. Ore below the tunnel level is mined through shafts sunk from the Adit tunnel level. Shrinkage stoping methods are used except in minor instances where timbering is required. The mine and milling plants are adequately equipped to produce copper at the rate of twenty million pounds per annum when operated at full capacity.

For economic reasons it is impracticable to develop and block out ore bodies far in advance of current operations. Because of the width and continuity of the Walker fissure zone both on strike and dip

as disclosed by past operations, and because of the nature and mineralogical character of the vein it is believed that the ore will persist and continue in depth and that the mine can be operated at full capacity for many years to come.

In conjunction with the mine and mill operation there are office and warehouse buildings, shops, residences, bunkhouses, schools and miscellaneous buildings. An 8.6 mile aerial tram connects the mill with ore bins on the Western Pacific Railroad at Spring Garden.

Very truly yours,

WWS:P

cc: Mr. J. R. Hobbins

March 26, 1937

Mr. J. O. Elton, Manager
International Smelting and Refining Company
O f f i c e s

Dear Sir:

In analyzing the operations of the Walker mine during the year 1936 a number of interesting facts have developed. In the first place the mill at the Walker mine has a capacity of approximately 1500 tons a day. Due to holidays, power shut downs, repairs, etc., we actually put through an average of 1243 tons a day for 365 days.

The cost of producing copper at the Walker mine during 1936 was .09399¢ per pound. This does not include depreciation.

453, 794 dry tons of ore, having a grade of 1.25 per cent copper, were milled during the year. In 1935 89,534 tons of ore, having a grade of 1.17 per cent copper, were milled. The grades of the ore for 1935 and 1936 were lower than in any year during the life of the Walker mine, the reason being that during the time metal prices were decreasing the higher grade ore was mined, leaving only the lower grade ore bodies available on which to commence mining. It is hoped that during the year 1937 that the grade will be increased. In addition to the ore produced from stopes, the copper bearing material obtained from development work and stoping preparations, which averaged considerably under one per cent copper, is also sent to the mill. Although each ton of this material shows a profit, it crowds out a ton of higher grade material which would show more profit. Also there are many places in the mine where after stopes have been prepared the grade of the ore has proved disappointing, and although it would be profitable to mine this low grade material at the

present time under present metal prices, there would be no use of crowding out the higher grade ore in order to produce the low grade material. Consequently a larger tonnage will have to be produced and milled in order to reduce costs and increase profits.

The development work for a long period of time before the mine was shut down was curtailed materially and it is now necessary to do a large amount of development work to get the mine back into good shape as far as ore reserves are concerned.

During the year 1936 $87,000 was expended in development work, the bulk of this money was spent on the lower levels.

The ore reserve for the Walker mine as of January 1, 1937 has just been calculated. Attached is a table giving a summary of this reserve. This shows that the total of all classes of ore above the 700 level amounts to 1,439,759 tons, and that the ore below the 700 level amounts to 2,055,100 tons, a total of 3,494,859 tons. At the present time 64 per cent of the production of the mine is coming from above the 700 level and 36 per cent below the 700 level; while the breakage is 75 per cent above the 700 level and 25 per cent below the 700 level. As the ore above the 700 level is well developed, and we do not anticipate finding much additional tonnage above this level, it will be necessary to develop and equip the mine for producing ore from below the 700 level. The mining of ore below this level would of course naturally increase the costs with our present equipment. In order to obtain the necessary funds for the proper development of the mine below the 700 level, it will be necessary to increase our profits on the ore extracted above the 700. While metal prices are high as much ore as can possibly be produced should be mined. In order to reduce our costs and obtain a greater tonnage, it will be necessary to enlarge the mill as this is the "bottle neck" of the operation. As before

stated, the present mill, while having a capacity of 1500 tons a day actually milled 1243 tons a day during the year 1936.

I wish to recommend that the mill capacity be increased an additional 500 tons a day. This addition I understand will cost approximately $100,000 and will probably bring the average daily production of the mine up to 1700 tons a day for the year.

The present fixed charges including superintendents are approximately $100,000 per year, the cost of treating concentrates is $83,000 per year. Very little additional expenses will have to be added to the above items if the production is increased 500 tons per day. During the year 1936, 910,750 pounds of copper were paid for. The overhead and treating expense on this production would amount to $185,000 per year, or .015¢ per pound of copper paid for. If the grade were maintained the same as at present and the mine production increased 500 tons per day, in which approximately 20 pounds of copper per ton would be paid for, an additional 3,650,000 pounds of copper would be produced during the year. This would reduce the overhead cost to less than 1¢ per pound and further reductions in the mining and milling operating costs would be made, besides increasing the total profits on the operation.

The present ore reserve at the Walker mine justifies the mill extension which will be paid for during a period of high metal prices and while the production is largely coming from the ore left above the 700 level. By increasing the mill capacity at this time we will be able to make a much greater profit and be in position to adequately develop the lower levels so that ore may be extracted from elevations below the 700 level at a cost much less than would otherwise be possible.

I am sending a copy of this letter to Mr. Dugan and asking him to write your regarding the matter.

Very truly yours,

TL:P

Tom Lyon

615

August 7, 1937

Mr. J. O. Elton, Vice Pres.,
Walker Mining Company
818 Kearns Building
Salt Lake City, Utah

Walker

Dear Sir:

As per your letter of July 20th, I have inspected the Mine, Mill, and Camp Facilities, and herein present my findings and recommendations.

THE MINE

This department is getting more spread out and harder to supervise as the workings become more extensive, spaced as they are in their respective ore-bodies for a distance of a mile and a half both above and below the main haulage level. Though the crews are large compared with past operations, the working places are so many that they are not over-manned.

The personnel of the crew I believe is above the average, mostly young men, many of them no doubt lacking in underground experience but efficiency is on the increase.

In 1082 Winze on July 9th the crew was increased by three pumpmen, whose sole duty is to keep the pumps running, and 28 feet advance was made for the last half of July, and for the same time, in 1017 Drift North and in a crosscut off this drift, 136 feet advance was made in 31 working shifts or almost 4.4 feet advance per shift which is commendable for this ground. Development advances increased from 452 feet in March, 607 feet for April, 680 for May, 1027 for June and 1150 feet for July.

In the Piute, the stopes north of 645 Stope have been finished up to the oxidized zone near the surface, but there is probably 40,000 or 50,000 tons of broken ore remaining in these stopes as of August 1st. 635 and 645 Stopes are still active and besides the broken ore in these stopes, there is still about 50,000 tons to be broken. There is also about 100,000 tons of recoverable ore in pillars in this orebody above the 7th level. Development on the ore is progressing both north and south of the shaft on the 8th and 9th levels and stope preparation is in progress. Since the dip of the ore below the 7th level is 32 to 38 degrees, slushing will be necessary. And since the north portion of this orebody is underlain by a very soft putty-like gouge that squeezes out under pressure, individual stopes must be small, and pillar raises avoided, unless put up through the ore, well away from this footwall gouge.

In the 712 Orebody, a small production is still coming from high grade stopes on the upper levels, though they are much less extensive than the stopes between the 5th and 7th levels. The 10th level is nearing its objective under this orebody, but is still in the metamorphosed igneous rock that carries blebs and zones of epidote, and in which, on the upper levels, very little ore has been found.

In the 517 Orebody, two raises 100 feet apart, driven from the 5th level, have proven the ore of good grade to extend to the horizon of the fourth level.

The North Orebody above the 7th level is nearly worked out except for pillars, but a footwall block recently developed is being rapidly opened up. This block now being opened in 720A Stope is very large, 40 to 50 feet wide and about 600 feet long, breaks and mills easy and though low in copper is better than average in gold and silver content. This should supply a large tonnage of easily accessible mill ore. Instead of pillar raises, our standard cribbed manways spaced 100 feet apart should be used for servicing the stope for economies sake. Below the 7th level, 1020 and 1030 Stopes were pretty badly broken up by faulting, and are about finished but 1040 Stope, and 920 and 930 Stopes promise to be large and profitable. Ore has not been found as yet on the 10th level under the northern portion of this orebody. It is either cut off by faulting or displaced by the same agency and not yet picked up.

Central Orebody--880 Stope is finished, but still contains considerable broken ore. 1041B Raise is being driven to the 9th level about 50 feet south of 706A Winze. No other work is in progress at this time, except 1082 Winze which is a continuation of 706A Winze below the 10th level. Considerable stoping ground remains below the 7th level, in the south end of this orebody.

South Orebody--Stoping is in progress in 775 Stope where quite a large tonnage of low grade ore is prepared for stoping. 768D Raise is being driven to the 5th level near the center of this orebody. Below the 7th level in this area is a large area yet to be developed.

DEVELOPMENT RECOMMENDATIONS

Piute Orebody--Continue developing ore north and south on 8th and 9th levels. Also develop north and south on the footwall vein that follows down on or near footwall of the shaft. Develop first on the 8th level if convenient for operation, or on the 9th or 10th level as may be designated by the Geological Department. I think however, development on one level at a time to be sufficent.

712 Orebody--Drive south on 4th level on ore at the turn of 450B Drift North, to prospect the extensive country to the south, partly above 705D Stope. Continue development in the north end of 712 Orebody on the 3d and 4th levels. Continue development in 1017 Drift North, and crosscut to the footwall. A short hole diamond drill, to spot the ore, the work to be done either by contract or with a purchased drill would likely save much development expense.

517 Orebody should be further developed on the 4th level, 6th level, and sub-level, the detail worked out by Geological Department. Two raises, 100 feet apart on the 5th level--one of which has reached the horizon of the 4th level--develop 26,000 tons of ore averaging 2.56% Copper and simplify future development.

Long Shot Development between North and 712 Orebodies--Drive 775B Crosscut West on 7th level to the fringe of the granite indicated in Drill Hole No. 13 and explore around the fringe of this granite. The distance is roughly 600 feet. The ore in 517 Orebody is headed in this direction. The granite is a mineralizer assaying 3 pounds to 4 pounds per ton in copper.

North Orebody--Develop the big country to the north over 560 Stope on 2d, 3d, and 4th levels, the procedure to be directed by the Geological Department. Develop the 8th level under the North Orebody as soon as practicable. Crosscut or Diamond Drill in 1017 Drift North under 760 Stope. I believe the ore, unless cut off by faulting to be in the footwall of this drift. Develop the footwall block on 9th and 10th levels under 761C Drift North, detail to be worked out by Geological Department. The 9th level is now partly in this block.

Central Orebody--Crosscut to hanging wall on 900 sub-level about 50 feet north of 706A Winze to prospect the streak of ore going off to hanging on 9th level Station. Continue 1082 Winze to the 12th level, the 13th level, and on to the 14th level, and develop on the highest level on which the vein comes in on hanging wall of the fault, and on each level below. When 12th level is reached, go deep enough for sump and pocket. Crosscut to hanging, cut hoist station, pump station, and sump, and move auxilary hoist down to this level for further sinking, levels to be 180 feet apart vertically.

South Orebody--Footwall vein--Drive 820 Drift North ahead under 790A and 775 Stopes --and later drive 901 Drift North also under these stopes.
Hanging wall vein--Drive 981A Drift North and 833 Drift North ahead following the ore if possible.

THE MILL has been running very satisfactorily and making good recovery. Of the new equipment, one line of eight Fagergren machines have been installed and are in operation, the Simonds Cone Crusher is in place, and all machinery is on the ground except the motor to drive the Simonds crusher, and the steel for screen hangers and the steel to extend the conveyor to the Simonds crusher.

SAWMILL
Lumber cut to August totals 736,780 board feet. The lumber is good mining grade--red fir--and the cut averages about 20,000 board feet per day.

TAILING DISPOSAL
Put in sand box and run sands into Dolly Gulch below Dolly Gulch By-Pass and slimes through tailing flume to south end of tailing basin. This procedure to prevent filling the settling basin above the dam, and to prevent the sands from filling up and overflowing the by-pass level.

THE CONCESSIONS
These were inspected and found clean and well operated. The Boarding House was clean, and mess and service very good. There is some agitation for a reduction of board but I believe this is confined to a very few who are looking for something to agitate. It could only result in a lower standard for meals and service which is undesirable. Better let the agitators hunt other fields more to their liking.
The Dormitories were inspected, the rooms were found to be clean and well cared for. Additional bedding may be needed before winter. No. 3 Dormitory is rather crowded due to summer peak.

The Change Rooms are well kept and clean. No. 1, and No. 2, are ample and not crowded but No. 3, the smallest of all, is so congested, many of the men go to their rooms without washing and changing. This is due to the fact that there are about 200 families in camp, and very many of these family men go to this dormitory to wash and change before going home. I suggest that a suitable fire-proof change room be built near the portal of the tunnel to relieve this congestion. This move would also be a safety measure to safeguard the health of the men from exposure when leaving the mine.

The Rustling List is quite a problem. Feeding and housing them--about 40 men--falls on the Boarding House. I recommend that rustling cards be issued giving date, age, dependents, trade or occupation and last place of employment. If the man does not get a rustling card he knows there is no use to stay in camp.

The Pool Hall seems well patronized and well run. It closes promptly at ten every night. The men in charge refuse to sell liquor to men who show signs of over indulgence. There is a heavy traffic of cars between the mine and Portola, afternoons and evenings and some of the men coming from Portola show signs of over indulgence. No bottled liquor is sold in camp on pay day nor on the two succeeding days. If the controlled sale of liquor is prohibited in camp it will still be brought in from the outside in quantity, and my experience has been that it will be worse than at present. Since the habitual booze hound is a potential silicosis hazard--our only silicosis cases in the past have belonged to this class--he should be eliminated. I therefore recommend that the camp rule which has been in force for many years be revived. This rule applies to men and bosses alike, and is to the effect that a man who loses a shift from drink or who enters or attempts to enter the mine under the influence of liquor, automatically discharges himself and is not subject to re-hire before the succeeding month. The habituals should not be re-hired. If a man wants to go on a party he should get a leave of absence from his boss and get out of camp.

Since the camp has grown to its present size and times being what they are, I recommend a two cell jail be constructed, the design to be okayed by the Sheriff of the county.

The Store is well run and prices are reasonable. It has been enlarged by an addition, 30 feet X 42 feet, and in the end space, 15 feet X 42 feet, has been installed a modern tiled Soda Fountain.

Sports--Softball is played on the commons every evening, and Horse Shoe Pitching and other outdoor games are in vogue.

The Camp has been kept well cleaned up and in order.

I took Mr. Bayer over the end lines of the Piute and other claims so he can locate himself if necessary. Camp water lines and springs were also gone over.

Very truly yours,

H. R. Geissendorfer

HAG
W

October 18, 1943

Mr. J. O. Elton, Manager
International Smelting and Refining Company
O f f i c e s

WALKER MINE

Dear Sir:

After our visit with Mr. J. R. Walker on Thursday October 14, I examined our records of the Walker mine and obtained the following information.

The tunnel referred to by Mr. Walker has been mapped by both Mr. Gidel and Mr. Billingsley, whose notes check in every respect. The tunnel penetrated two streaks of mineralization; the first was 12 inches wide and was 580 feet in the footwall of the main vein; the second was about two feet wide and was cut 390 feet from the footwall of the main vein. Neither of the streaks appeared to be important enough to justify further development. Aside from a porphyry dike about 80 feet wide, the tunnel was in unmineralized schist.

Drilling

On the 7th sorting level, a hole was drilled from a point 275 feet north of the main shaft into the footwall for a distance of 527 feet in unmineralized schist.

On the 1000 level from a point 50 feet south of the main shaft, a hole was drilled for a distance of 914 feet. At a point 250 feet from the footwall, a four foot vein was encountered which assayed one per cent copper, the rest of the hole was in unmineralized schist.

These holes were drilled directly beneath the upper tunnel and crossed the entire area penetrated by the tunnel which is 930 feet from portal to footwall.

The above holes prospect the ground referred to by Mr. Walker. In addition to the above mentioned drilling, holes were drilled into the footwall both north and south of the main shaft with negative results.

On the main haulage level (700) a small vein was cut 500 feet from the footwall of the main vein. A drift was driven to the north in this small vein, which is from three to four feet wide, for a distance of 275 feet. At this point the vein became very weak. No commercial ore was encountered.

I trust that the above information answers the questions raised by Mr. Walker.

Very truly yours,

TL:P

Tom Lyon

June 13, 1942.

Mr. W. C. Browning,
Western Representative,
The Gold Fields American Development Co.,
1214 Pacific Mutual Building,
Los Angeles, Calif.

Dear Mr. Browning:

Replying to yours of the 8th, will say that we have complete assay and gelogical maps of the Walker mine in our Salt Lake City office and that all of the cost sheets from the beginning of operations are also in our Salt Lake City office. Mr. Tom Lyon, our Chief Geologist, will be glad to make these available to you and will either go to the Walker mine with you or arrange to send one of his geologists who is familiar with the property.

At the present time the mine is closed down and the boarding house is not operating. However, the mine is only 23 miles from Portola on the Western Pacific Railroad. There is a good road between the town of Portola and the Walker mine. Portola has a fair hotel, and Feather River Inn, a summer resort which is now open, is only 3 miles west of Portola on the Western Pacific, and on the hard surface east and west main highway connecting Salt Lake City and San Francisco. It only requires 30 to 40 minutes to drive from Portola to the mine. I am sure you would be comfortable at Portola or the Feather River Inn.

Since we have copies of all the mine records, including cost sheets, assay and geological maps, mine, surface and camp maps, copies of inventories of warehouse stock along with ore reserve figures in our Salt Lake City office you can see them here and pick out what you want to take to the mine. There are five men at the mine. None of these are technical men. However, they could be used to help you should you need any ordinary labor,

If you will give me a few days advance notice, I can promise to have Mr. Lyon available in Salt Lake City when you or your representative arrives here.

Yours very truly,

J. O. Elton.

JOE:S
Blind copy to EOS: CEW:TL

June 1, 1942

Mr. J. O. Elton, Manager
International Smelting and Refining Company
O f f i c e s

Dear Sir:

Mr. C. E. Weed just called me from New York. He tried to get in touch with you but you were not in so he gave me the following message for you.

Karl Lundberg of the Goldfield American Development Company is interested in the Walker mine. Mr. W. C. Browning, their engineer, will call on you any day regarding the matter. Mr. Weed said to make available any and all of our information concerning the property.

Mr. Weed added that under no circumstances were we to discuss any deal on the property and that we should notify either Mr. Lundberg or Mr. Browning that any proposition would have to be made in New York. Mr. Weed stated that if they came to New York he would get in touch with you by telephone and ask your advice on any deal that might be suggested.

Very truly yours,

TL:P

Tom Lyon

1504 Laburnum Ave.
Chico, California

March 26th, 1942

Anaconda Copper Co.
Salt Lake City, Utah

Dear Sirs:

I am writing you in regards to the assessment work on the Copper King claims near the Walkermine Property.

I worked out the assessment on these claims last year while I was in the employ of the Walker Mining Co. of Walkermine, anc would like to put in a bid for the work again this year if there is to be any.

I will either contract the assessment work for a given number of advance footage, including necessary timbering, for a given price, or for a given price per foot advance (drilling and mucking) with a separate price for the timbering necessary.

I am fully capable of undertaking the work due to the fact that I worked ther last year and know the exact location of the tunnel and the exact kind of equipment necessary for the job.

I can give you Mr. Wm. Warren formerly Mine Foreman of Walkermine, and now at Tooele, for a reference.

I trust that you will give me an answer in the very near future so that I can arrange to take care of the job.

Sincerely yours

Harold C Nielsen

Harold C Nielsen

1504 Laburnum Ave.
Chico, Calif.

ANACONDA COPPER MINING COMPANY

Butte, Montana

Geological Department
RENO H. SALES, Chief Geologist
M. H. GIDEL, Asst. Chief Geologist

December 24, 1941.

Mr. Tom Lyon,
820 Kearns Bldg.,
Salt Lake City, Utah.

Re: Walker Ores.

Dear Tom:

Have you ever tested the Walker ores for scheelite? If you have any samples of that garnet chalcopyrite mixture from the Piute orebody, I wish you would examine them under your mineral-lite lamp.

Yours very truly,

Reno H Sales

RHS:KM

cc: CEW

RENO H. SALES

November 3, 1941

Mr. John F. Dugan, Gen. Supt. of Mines
International Smelting & Refining Company
818 Kearns Building
Salt Lake City, Utah

Dear Jack:

The Shut-down Estimate which I gave you, did not include keeping up location work on patented claims. We have 283 of these, in addition to 7 of the Copper King which we have under option, and about which I recently wrote Mr. Lyon, with a copy of the letter being sent to you. There are 7 more in the Add group, which we took up last summer to cover the downward extension of the Piute. We will not have to do any assessment work on these until next year.

Mr. Lyon's office has always taken care of recording the assessment work on these locations and heretofor, there has been sufficient work done underground to cover this. It will require some close checking to see whether we have done enough work since the first of July for this year. Undoubtedly, a number of these claims could be dropped. This letter is merely to call your attention to the matter.

Very truly yours,

H. M. Hartmann

HMH:dm
cc - Mr. Lyon

FORM 396 4-1-41-2M

WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

October 24, 1941

H. M. HARTMANN, MANAGER

Mr. Tom Lyon, Chief Geologist
International Smelting & Refining Company
818 Kearns Building
Salt Lake City, Utah

Dear Tom:

With the cessation of operations here, it seems very likely that we will no longer wish to continue the option on the Copper King Group of claims. I understand the contract for this group of claims is in Salt Lake, but Mr. Droubay told me when he was here, that we are supposed to give a considerable length of time for notice if we did not intend to do the assessment work for the following year.

There are seven of these claims, costing us about $700.00 per year for assessment work. I call your attention to this, so if we wish to give the claims up, there will be sufficient time for notification.

Very truly yours,

H. M. Hartmann

HMH;dm
cc - Mr. Dugan

October 6, 1941

Mr. Virgil R. Chamberlain, Geologist
Walker Mining Company
Walkermine, California

Dear Chamberlain:

I have your letter of October 1 regarding the possibility of your being transferred to some other property in the event the Walker Mine closes down.

I have discussed this matter with Mr. Sales, and although we have nothing definite to say about where you might be sent at this time, we will undoubtedly have something for you to do.

Kindest personal regards.

Very truly yours,

Tom Lyon

TL:JW

FORM 396 4-1-41-2M

WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

October 1, 1941.

Mr. Tom Lyon, Chief Geologist,
International Smelting & Refining Co.
818 Kearns Bldg.
Salt Lake City, Utah.

Dear Mr. Lyon:

As there is consierable talk of the mine closing, I am somewhat anxious to find out if I would be transfered to some other property of the Company's in the event that the Walker does close.

Would you please advise me on this point at your earliest convenience.

Very Truly yours,

Virgil R. Chamberlain

Virgil. R. Chamberlain

FORM 396 2-1-41-2M

WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

September 8, 1941

Mr. Tom Lyon, Chief Geologist
International Smelting & Refining Company
818 Kearns Building
Salt Lake City, Utah

Dear Mr. Lyon:

I am enclosing the final set of figures on the expenditures for the Copper King Claims, as turned in by the Accounting Deparment.

Very truly yours,

E. J. Lomnes

EJL:dm
Encl.

E. J. Lomnes
Chief Engineer

FORM 396 4-1-41-2M

WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

September 8, 1941

COPPER KING EXPENDITURES

1940 - 1941

(Appropriation No. 19)

Labor		$554.59
Supplies		64.68
R E C & H		45.79
Auto Trucks		5.83
Shops		3.33
Social Security Taxes		22.19
June 30th 1941 M/D	5051	1.40
" " "	5053	10.00
" " "	5054	7.00
July 15th "	5070	15.00
Total		$729.81

FORM 396 8-40 2M M.P.C.

WALKER MINING COMPANY
WALKERMINE
PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

September 8, 1941

COPPER KING EXPENDITURES

1940 - 1941

(Appropriation No. 19)

Labor		$554.59
Supplies		64.68
R E C & H		45.79
Auto Trucks		5.83
Shops		3.33
Social Security Taxes		22.19
June 30th 1941 M/D	5051	1.40
" " "	5053	10.00
" " "	5054	7.00
July 15th "	5070	15.00
Total		$729.81

ANACONDA COPPER MINING CO.

COPY

August 30, 1941.

Mr. S. K. Droubay, Supt.,
Defense Chrome Operations,
Columbus, Montana.

Dear Mr. Droubay:

I wish to thank you for the information given in your recent letter regarding the occurrence of green chloritic material and its possible relationship to higher gold values in certain portions of the North Piute orebody in the Walker Mine. We also note your comment that the hangingwall greenish quartz seams assayed 0.10 oz. gold, which is probably .05 to .07 oz. higher than that in the balance of the vein. I believe the association of green (ferrous (?) iron minerals) usually is indicative of a relatively higher gold content in a gold bearing vein or orebody. At least, such occurrences are too common in many deposits to be merely coincidental.

Chamberlain stopped in Butte for a few hours last week upon his return trip from Great Falls to the Walker Mine. I was surprised to find out that, to date, no prospecting has been done to test the possibilities of the footwall zone of 712 orebody beneath the outcrop of the silicified iron-stained reef extending S50° W from the Piute outcrop. Chamberlain will map this surface area immediately and probably outline, at least, a couple of drill holes to test the zone. You will recall our previous discussions regarding this rather prominent topographic feature and the possibility of a vein lying along the north

ANACONDA COPPER MINING CO.

COPY

margin of same. The outcrop of such a vein could be concealed by the alpine bog and vegetation which has developed from the accumulation of deep snowbanks. The abrupt drop in the surface contour at the north edge of the mineralized reef may be the result of more rapid erosion of softer limonitic vein material lying above a possible orebody. The occurrence of bornite as disclosed in the 712 ore zone also makes this prospect an attractive gamble for drilling two or more holes into the footwall area from conveniently located points, say on the 400, 600 or deeper levels.

This prospect came to my attention in July, 1938, after spending a day in scouting the main vein outcrops on the Walker property. At the time I discussed the matter with Messrs. Weed, Dugan, Beyer and Kildale. The latter planned to map same, but apparently he was detoured on other work.

I will appreciate any comment or suggestions you may have about exploring the footwall area of 712 ore zone.

With kindest regards, I am

Yours very truly,

M. H. GIDEL

MHG/aw

cc: CEW
RHB
T.L.
JFD
VDP
VC

FORM 396 8-40 2M M.F.C.

WALKER MINING COMPANY
WALKERMINE
PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

April 17, 1941

Mr. M. E. Gidel, Assistant Geologist
Anaconda Copper Mining Company
Hennessy Building
Butte, Montana

Dear Mr. Gidel: Re: Geology of Walker Mine.

I have given considerable thought to the questions you asked in your letter of March 17, 1941, and will give you my interpretation of conditions as I have found them. There is still considerable doubt in my mind, and for this reason I have tried not to form any definite opinions that may later be proved to be entirely wrong.

1. Do we consider the No. 1 Main hanging wall fissure to be pre-mineral or post-mineral? (We are now almost certain this ties in with the footwall clay of the Piute Orebody.)

The relation between our Main Orebody mineralization and this fissure, has been one of the important geological problems since the opening of the lower levels, and it has not yet been fully determined. Development work along the North Orebody 900 and 1000 Levels, shows that the fissure weaves in and out of the vein, without any apparent displacement of quartz which suggests little, if any, post-mineral movement. From this, we should not consider the Orebody strike faulted, and should not expect a displaced portion on the East side of the fissure lower down. The gradual diminishment in size and grade of the vein with depth, before coming in contact with the fissure also supports this line of thought. We could explain the presence of brecciated quartz along the fissure on the 900 and 1000 Levels, as due to the slight post-mineral adjustments that resulted from the cooling of the granite and the surrounding rocks. This brecciated quartz is found only in places where the vein is right against the fissure. The present clay and breccia zone of the fissure, (including broken vein quartz), would in this case, be the result of the same adjustment. In other words, the pre-mineral fissure zone has been roughly transversed by a post-mineral adjustment. This passed from the fissure zone into the wall rock at points of weakness where the vein flattened and where it changed direction in strike. Thus, our No. 1 hanging wall fault would be a post-mineral adjustment which followed the original channel of the advancing ore fluids, until a change of dip was encountered at the approximate 1000 Level, and a change of strike was encountered North of the 712 Orebody. The fracture took the line of least resistence, which carried it into the hanging wall of the main orebodies and along the footwall of Piute.

There is quartz and mineralization in association with this fissure on the 1200 Level under the Central and North Orebodies, also on the 900 Level at Piute, which suggests bottle necks through which ore fluids passed.

On the other hand, there is evidence in favor of considering the possibilities of ore at lower levels under the present orebodies, but in my estimation, these are not too sound. The fact that we have vein segments on the hanging wall side of the No. 1

fissure along the North Orebody 900 and 1000 Levels, suggests a possible fault throw, however 1200 Level developments directly under this area are not very promising. There exists some streaks of footwall mineralization, that may get better at depth, also there is the possibility of favorable conditions having existed along the fissure at lower depths, that have caused ore depositions of a different type than we have developed and mined above. Perhaps some Diamond Drilling to cut the fissure at lower depths should be done from the 1200 Level. I think Mr. Sales and Mr. Lyon have given considerable thought to such a plan.

Since development work along the 900 Level of Piute and especially North of Piute, has indicated a zoning condition that may give us a better grade ore in the Northern regions along our vein zone at greater depth, it is my belief that it is in this country that rests the future of Walker Mine.

2. Is there anything significant about the probable zoning of schist and vein minerals?

There is a marked decrease in the relative amount of pyrrhotite in association with chalcopyrite, progressively North from the granite contact at the South end.

From my observation, there seems to be considerably more garnet progressively North with the exception of the North Piute Orebody, which is considerably different from Piute. At least, the garnet is much more conspicuous in lower Piute, where it occurs as veinlets cutting through the vein quartz as well as a dissemination throughout the schist and the vein. The dissemination of garnet is rather common throughout the Mine, especially in the wall rock where there are zones that are more highly concentrated than usual. I have generally believed that the garnet as well as the magnetite, are your so-called schist minerals, and are residual within the vein. However, the coarse garnet as it occurs in the veinlets of the lower Piute ore, seems to have been introduced during a later surge of mineralization in association with Barite, Magnetite, Chalcopyrite, also some Zeolites and Calcite.

Magnetite is abundant in all orebodies, both in the vein and in the wall rock. Some is coarse and some is fine grained, and local concentrations may be found in any orebody. I imagine a microscopic study would reveal a number of generations of magnetite.

I would not say that the relative amounts of garnet or magnetite has any bearing on the grade of ore.

With the exception of the North Piute Ore, where chalcopyrite is deposited along the structure of chloritic schist, I would say that the deposition of copper minerals is usually accompanied by silicification. It appears that veins were formed by more than one stage of mineralization, starting with the typical glassy quartz vein, containing some sulphides, that was later fractured and enriched by chalcopyrite being deposited along the fractures. It is not uncommon to see lighter colored quartz veinlets of a later stage, cutting through the glassy quartz vein, and these veins as a rule, carry coarse chalcopyrite, chlorite, micas and possibly, other minerals.

Primary chalcocite is very rare, and what I have seen, comes from areas that carry bornite. Bornite is quite common and occurs principaly as localized disseminations along shoots in the 712, Piute, and North Piute Orebodies. These minerals do not seem to be associated with the extreme silicification that accompanies most of our ore, but is accompanied by a chloritic alterations of the host rock that leaves it distinctly green in color. Very often the bornite occurs intergrown with approximately an equal amount of chalcopyrite, and the combined minerals form small isolated masses disseminated in the vein. Bornite and chalcocite are not associated with the barite, garnet and magnetite, as they occur in lower Piute, although there is some bornite in this country. I think the bornite is earlier than these minerals.

3. Does the strike of our vein conform generally with the banding of the schist?

From my observations, the strike and dip of the Walker Vein to the 712 Orebody, conforms very closely with the banding of the schist, which averages about North 25 degrees West. North of the point where the footwall vein of the 712 Orebody intersects the Main vein; the Piute and North Piute Orebodies are off-set to the East, and their strike changes to practically due North. However, the banding of the schist still remains roughly North 25 degrees West, and carries normal dip, (plus - minus 55 degrees), even though the orebodies flatten to 40 degrees or less.

The hanging wall of the South, Central, and North Orebodies is very often banded with parallel quartz veinlets for a few feet into the massive wall rock, which suggests a direction of shear before mineralizing fluids were introduced. This banded structure is often apparent throughout the full width of the vein, presenting parallel layers of quartz and schist that make up the vein. This is generally referred to as "horses" of waste within the vein. On the other hand, in Piute especially, this parallel banding of quartz and schist angles to the strike of the orebody and usually dips steeper than its footwall. This banding has the normal North 25 degrees West, strike and roughly the normal 60 degrees to the East dip, but the footwall of the orebodies, (Piute and North Piute), are approximately North and South.

These conditions suggest that the original schist was banded with a North 25 degrees West shear, but the ore fluids came in along a later fissure that followed the banding to the 712 Orebody, but cut across it where Piute and North Piute was formed. The quartz banding and schist structure of these two orebodies, are very pronounced and definitely make an angle with the footwall (strike) of the orebodies.

These conditions suggest that the banding of the schist was developed at an earlier date than the vein was deposited.

In conclusion, I might say that it is very possible that a favorable zoning condition exists in conjunction with Walker Mine Ore, and that lower temperature orebodies of better than average grade may be found at intervals along the strike to the North.

I trust that these opinions are not too far from right, and that future developments at Walker Mine will disclose something worth while.

Very truly yours,

S. K. Droubay

S. K. Droubay

SKD:EM

cc - Mr. Wood
Mr. Sales
Mr. Lyon
Mr. Perry

ANACONDA COPPER MINING CO.

COPY

March 17, 1941.

Mr. S. K. Droubay,
Walkermine,
Plumas County, Calif.

Re: Walker Mine
Plumas Co., Calif.

Dear Mr. Droubay:

I received your letter of February 22nd (including map), in which you summarize the results of your study of the structural and mineralogical relationships in the respective ore-bearing zones developed in the Walker Mine. After reviewing this interesting information, I am prompted to comment on certain items, as follows:

South Orebody - last two lines on page 1, quote:

"The east vein has pitched against the hangingwall fissure on the lower levels and will die out against the fissure, if it does the same as the Central Orebody".

This statement leads me to ask if you consider the clay seams to be pre-mineral or post-mineral, a highly important question bearing directly on the possibilities of finding any ore in the South, Central and North ore zones in the Walker Vein at elevations below present bottom levels. If the orebodies are gradually cutoff by post-mineral strike faults, is it possible that the vein may be pulled apart or displaced downward below present bottom levels? If so, should some prospecting be done to check such a possibility?

However, quoting the next to last paragraph in your letter:

"From a casual glance of the 900 level plan, one could almost imagine that the Piute and North Piute orebodies are thrust faulted lower portions of the Central and North orebodies".

You imply a possible lateral or thrust displacement along the fault aggregating 2500 feet or more. This idea appears fantastic, even though the Piute orebodies are on the hangingwall side of the fault clays and the southerly orebodies are largely on the footwall side of the clays.

From your description of the mineral associations in the Walker Vein, I get the impression that there may be a general zoning, that is, a higher ratio of pyrrhotite to chalcopyrite inthe south portion of the mine compared with decreasing amounts of pyrrhotite existing in the North, 712, and Piute orebodies. Also, it appears that there is an increase in the relative amounts of garnet in the vein zone as you go north in the mine. What

ANACONDA COPPER MINING CO.

COPY

about relative amounts of magnetite or other "schist" minerals? Do you think there is anything significant about this probable zoning of schist and vein minerals, including the types of associated quartz and the rarer occurrences of bornite and primary chalcocite?

Referring to your map, I note that the dip of the vein structure varies gradually from 90° at south end of the mine to 35° east (9340 drift) at the north end of the Piute workings. Do these dips (and the strike) conform generally to the banding in the schist? According to your description (Page 3) the Piute orebody at least occurs in a sheared zone which angles slightly to the schist banding. In other words, was a large portion of the mineralization in the Walker Vein deposited contemporaneously with the development of schistosity, or was it introduced following later intrusives into the schist, such as the diorite plug northwest of 712 ore zone, and/or the granite farther south?

I appreciate receiving the map and letter summarizing your observations of the geology at the Walker Mine. Otherwise, at this time, I would not be prompted to ask the above questions regarding the subject, further study of which might suggest some prospective possibilities of importance.

With kindest regards,

Yours very truly,

MHG:KM

cc: C.E.W.
R.H.S.
T.Lyon
V.D.P.

M. H. GIDEL