

# International Smelting Company



J. O. ELTON,  
MANAGER.

SALT LAKE CITY, UTAH. May 25, 1928

Mr. B. B. Thayer,  
25 Broadway,  
New York.

Dear Mr. Thayer:

Under separate cover I am sending you a set of Walker maps giving the information requested in your letter of May 21st.

Please refer to the map showing Piute ore body. It is our plan to develop this ore body for mining. The program calls for an incline raise to be run in the footwall, starting as indicated in pencil on the map, to connect with the Piute surface tunnel. Intermediate levels will be driven from this incline raise to the ore body. The raise will serve as a safety exit for men, for ventilation, and as a timber passage, to the whole mine. There is lots of good timber on the surface in the vicinity of the Piute surface tunnel. About 30 feet above the 700 level we plan to run a working level connecting it by means of raises at short intervals with the haulage level following the general development plan of the main ore body. Experience has taught us that this is the cheapest way consistent with safety to take out Walker ore. A certain amount of sorting can be done on this level; boulders broken before going into the rock raise, which is large enough to hold ore to fill a whole train.

The diamond drilling campaign is beginning to show results. Hole #16 encountered a quartz vein at 244 feet going through 9 feet of mineralized quartz, then through 18 feet of over 2% copper bearing quartz.

On April 19th, copy of map giving the diamond drill locations was sent you. You will remember that when you were in Butte, you were sent a copy which you were to hand to Mr. Daly. Copy of this was sent to you at New York. Another map showing the position of this hole and the location of the ore, will be sent you within a few days.

It begins to look as though the ore found in #16 hole is a north continuation of the ore body which blew up further south near coordinate 1700. The map which we will forward you shortly will show these general relations.

I expect to visit the mine next week.

# International Smelting Company



J. O. ELTON,  
MANAGER

SALT LAKE CITY, UTAH.

Mr. B. B. Thayer -2.

Copy of this letter, together with copy of the set of maps, is being sent to Mr. Daly. These maps have just been received.

Very truly yours,

JOE:H  
CC:WBD:TL:  
v

J. O. Elton,

Vice-President.

Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

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August 14, 1929

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

Subject:  
WALKER MINE

Dear Sir:

The accompanying map and sections show the tunnel which has been proposed that will cut the Walker vein approximately 2200 feet below the 700 level. There are several things to consider regarding driving of this tunnel. First, what evidence is there that the ore will exist at this elevation? Regarding this question, I would say that the indications are very favorable for the existence of ore at this level. In the first place, our 1000 foot level, which is being driven northward beneath the Central ore body has been in ore for the last 1000 feet (See Section), and has demonstrated the ore to be more continuous on the 1000 foot level than it was on the 700; the grade of the ore is two per cent and the average width for this distance is eight feet. In the second place, at the Five Bears property, which is located at the portal of the proposed tunnel, several copper ore bodies were encountered. Unless there has been some faulting between the Walker and Five Bears mines, I think that the indications found at the Five Bears would lead to the belief that the Walker ore bodies should extend to this depth.

As you know during the past year the costs at the Walker have been remarkably low. It will be impossible to continue these costs

2- Mr. J. O. Elton

August 14, 1929

Subject: Walker Mine

when all of the ore extraction comes from beneath the 700 level. If we wait until a shaft is sunk 2200 feet below the 700 level to determine the advisability of driving this tunnel, and then take additional time to drive the tunnel itself, we may be too late to accomplish the purpose of the tunnel, which would be to drain the mine and avoid the additional cost of pumping and hoisting ore.

In addition to reducing costs, etc., the tunnel would prospect a very likely area. I have been over the surface of this area a number of times and find that it is covered with brush and soil and there are very few outcrops. It will be remembered that the outcrop over the Plute ore body occupied space of about 20 by 50 feet and did not look at all promising. Outcrops like this could easily be missed in the heavy timber and brush which grow over the area which the lower tunnel would prospect.

I believe that if your proposed method of financing this tunnel could be accomplished that it would be good business to start the tunnel immediately, as it will require 10,400 feet of work to reach a point beneath the northernmost workings on the Plute ore body.

Very truly yours,

TL:P

Tom Lyon

Calif

2/3

July 3, 1929

Mr. J. O. Elton, Manager  
International Smelting Company  
Offices

Dear Sir:

During my visit to the Walker mine the latter part of June, there were two pieces of major development that I noted and wish to call to your attention.

First - A winze below the 700 level should be sunk on the Piute ore body. Our experience in the southern part of the mine has demonstrated that ore exists for at least 500 feet below the 700 level in that area. The Piute ore body seems somewhat different in character than the other ore bodies which have been developed in the mine; the difference being in the lack of quartz in the Piute ore body as compared with the ore bodies further south. It is possible that the reason for this is that the Piute ore body originated at a lower elevation than the other ore bodies which were found to the south, and that the upper part of the Piute ore body which we have developed to date, lies at a relatively higher elevation, and that deeper development will prove an increase in quartz content together with a slight increase in the metallic content. There is no certainty about this but a possibility. However, the winze should be sunk and the ground beneath the 700 level

2- Mr. J. O. Elton

July 3, 1929

Subject: WALKER MINE

explored. I do not think it will be necessary to run a level off for at least 500 feet vertically beneath the 700. As to the location of the winze, I talked the matter over with Mr. Geisendorfer at the mine and we agreed that the point at which a winze should be sunk should be directly beneath the present raise to the surface, so that one hoist would answer for all purposes.

Second - The main drift on the 1000 level should be extended northward and the North Ore body explored. You will recall that the interval between the North Ore body and the Central ore body was barren on the 700 level. This condition was due partly to faulting and I believe that the dip of the vein and the faults will diverge below the 700 level, and it is quite possible that the vein may be continuous between the Central and North ore bodies.

These two pieces of development work are the most costly, but also the most important to the Walker operations.

Very truly yours,

TL: P

Tom Lyon

613

WALKER MINE

July 22, 1938

MEMORANDUM

The following recommendations are for the proposed short-range development program at the Walker mine. They are listed according to levels.

It is proposed that the recommendations concerning development of the Plute vein on the 8th level be given the preference.

THIRD LEVEL

Continue 363 B Drift northwesterly on the Main vein (North Ore Body) and crosscut to footwall and hangingwall of structure as required.

Object - To prospect the possible northerly extension of the North Ore Body above 460 stope.

Approximate Work -

400' or more of drift  
150' or more of crosscuts

SIXTH LEVEL

Continue 619 Drift southwest on projection of ore-bearing vein exposed in 517 B drift southwest.

Object - To develop the downward projection of 517 ore body. There is approximately 200 feet length of vein in 517 B drift which averages about two per cent copper.

Approximate Work

250' of drift or more.

SEVENTH LEVEL

Extend 732 crosscut due east a distance of 60 feet beyond present face at 10 feet east of 703 drift south. Drift both ways on any ore thus exposed.

Object - To cut northerly projection of vein (course N 7° E) exposed in 743 crosscut east (180' S. of 732 crosscut).

Vein in 743 crosscut is three feet wide containing bands of sulphide with some chalcopyrite. Car Sample 1.21 per cent copper.

Approximate Work

Total new crosscut 60'

SEVENTH LEVEL

Drive crosscut N 60° E from offset in 712 drift northwest at point 380 feet southeast of 706 A. Winze.

Object - To cut one or more probable veins lying on the hangingwall of the Main vein opposite the Central ore body. These probable structures are indicated in 709 D. drift and in D. D. Hole No. 8.

First vein cut in D. D. Hole No. 8 contained two feet of quartz assaying two per cent copper.

Approximate Work

Total new crosscut 150' or more.

Drive crosscut N 60° E from 712 Haulage drift starting at a point 400 feet northwest of 706 A. Winze. Drift on any ore thus found.

Object - To explore probable hangingwall splits of vein shown in 712 drift, and in D. D. Hole No. 8, lying in block of ground between northeast faults.

Approximate Work

150' or more crosscut plus drifting.

Continue 765 A. drift southeast on the east split of the Piute vein.

Object - To further prospect this vein.

Approximate work

100' or more.

Drive crosscut S 75° W from 712 D. N. starting at a point 230 feet northwest of 728 A crosscut.

Object - To prospect for possible extension of 712 vein structure northwesterly beyond a north-south fault.

Approximate Work

100 to 150' of crosscut.

EIGHTH LEVEL

Continue 818 A drift northerly on Piute vein and crosscut as required to determine footwall and hangingwall of structure. Upon exposing the north-east fault which terminates the north end of the Piute ore shoot on 700, plan further work from the proposed 800 drift to recover the faulted vein.

Object - To complete the development of the Piute ore body to the northeast fault, and to generally prospect for its further extension to the north or northeast beneath the basalt caprock. This development will enable us to locate better sites for future diamond drill prospecting in this area.

Approximate Work 140' to cover ore projection beneath 700 level  
600' or more additional general development.

Continue 886 drift south on Piute vein.

Object - To develop projection of southerly portion of Piute ore shoot beneath ore exposed in 765 A drift. It may ultimately be desirable to continue this drift to the projection of 712 ore body.

Approximate Work - to south end of Piute ore body - 300'  
additional work to 712 ore zone 1200'

NINTH LEVEL

Continue 972 B crosscut an additional 200 feet due west beneath Piute Incline shaft. This crosscut is now in 65 feet.

Object - To prospect for possible footwall branches of the Piute vein. Small vein structures have been noted in the Piute shaft lying west of the main ore shoot.

Approximate Work - 200'

TENTH LEVEL

Continue 1017 lateral for 200 feet northwesterly on same course, then turn crosscut therefrom N 70° E for 100 to 150 feet through projection of 712 ore body.

Object - To develop downward projection of 712 ore body beneath 719 B drift.

Approximate Work

200' lateral  
100' - 150' crosscut.

Drive crosscut S 75° W from 1017 Drift northwest starting same at a point 220 feet south of 1008 B crosscut northeast.

Object - To prospect for possible northerly projection of North Ore body beyond a north-south fault zone.

Approximate Work

200' of crosscut.

April 1, 1924

Mr. Wm. Wraith, Vice-President  
Walker Mining Company  
Room 1825, 25 Broadway,  
New York, N. Y.

Subject: WALKER MINE

Dear Sir:

Regarding the recommendations made on the 700 level Walker Mine, north end:

The points raised by you in your letter of March 14th to Mr. Elton are entirely reasonable and proper. The development of the north end is less important and less attractive than that of the south end and should not be permitted to retard the latter in any way. It is my belief that we have provided for the prosecution of the south end work as rapidly as mining conditions and equipment permit. If not we will raise the rate of work to this point.

As to the north end, I was led to recommend additional work below the 600 for the following reasons:

1. The "Sub-level " development north of the shaft showed the very top of a block of ore which should be larger on the 700. The new 700 work will place us within easy cross-cutting distance of this.
2. The sideswiping in 613 crosscut, while not as successful as was hoped, still shows the presence of a considerable body of three percent ore. Going up, this will probably be cut off within 60 feet or so, but going down should reach the 700 level without serious interruption. This relatively rich bunch may be the nucleus of a considerable body of ore that will exceed

2- April 1, 1924

in grade the break-even limit of mining, which with present costs is below two percent. The proposed work on the 700 has been laid out with a view of reaching the downward projection of this 613 bunch. My recommendation stopped at this point, leaving for a later date the matter of extending the drift farther northward. If it is so extended until below the 627 crosscut it will reach a total length of about 900 feet as indicated by Elton.

3. The north zone has now been developed on the 300 and the 600. While in general below profitable grade, as you point out, there are places on both levels where the break-even limit is exceeded, particularly as recent costs indicate that this limit may in the future be lower than we have in the past been able to concede. Between the 300 and 600 is over 300 feet, on the dip of the vein, which is far too great a distance to leave unexplored. A certain number of raises must be driven from the 600 to the 300 to develop this ground. At present the driving of such raises would be very difficult and expensive because of ventilating difficulties due to the fact that the 600 north drift is a dead end. If however the 700 is extended out below and a raise put up to the 600 at some point where the grade of the ore justifies it, a circulation of air will be established that will greatly simplify the driving of raises from the 600 to the 300.

It is impossible to predict just what width and grade we expect to find in the 700 north country. We have, however, two showings above the 700 - in the "sub-level" and in 613 cross-cut, that we feel deserve development on that level, and the recommendation #5 was made to accomplish this, together with the

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other ends above outlined.

I agree absolutely with you in the points you emphasize in the concluding paragraphs. We must push the south end, and we must get new shrinkage stopes ready for mining as soon as possible. The north end work is not an alternative to this program. It is merely an addition to it that may give us some more ore.

Very truly yours,

(Signed) Paul Billingsley

April 22, 1924

Mr. J. O. Elton, Manager  
International Smelting Company  
OFFICES

Subject WALKER MINE

Dear Sir:

Following is the situation at the Walker Mine as of April 19, 1924.

1- 703 drift, at the south end of the 700 level has reached a point 350 feet from its initial point. The vein continues of good grade, the width varying from 4 to 6 feet. In the last 100 feet the course has changed from southeast to nearly due south. This should make this vein converge toward the larger branch which lies to the west, and it is hoped that the crosscut west, which is now to be started at the 350 foot point, will encounter this western vein within 25 or 30 feet.

A raise should be started soon from 703 drift at a point which I do not wish to decide until after discussion with you. Several locations are possible and you may prefer one to another from the point of view of mining convenience.

2- The north end of the 700 has been driven about 40 feet on the course outlined (712 drift)

3- Sub-level- The work done in accordance with the recommendation has disclosed a large wedge of vein lying north of the shaft. It is about 50 ft. in width, and has been developed for a length of about 100 ft. In grade and character it resembles the vein at the north end of the 600 level, and there is little doubt that it will completely bridge the gap between the main orebody and this northern portion of the vein.

2- April 22, 1924

The interval between the present face of the sub-level and the first crosscut in the vein on the 600 is about 300 ft. This will be developed on the sub-level (637 S drift)

4. 616 North In the last 200 feet the vein has somewhat improved in grade. The latest crosscut, No. 657, shows on the hanging wall about 25 ft. of 2.5% ore. The total width has increased to over 50 feet.

Unfortunately, at this point a very strong fault, coming in from the west, is beginning to truncate the vein. The fault runs N-S, dipping 60 deg, East. It will soon, therefore, be necessary to recover the vein on the other side.

In order to secure all possible information as to the throw of this fault, I made a new examination of the surface, which was facilitated by the small amount of snow. The accompanying sketch shows the results. The fault seen on the 600 is marked on the surface by a pronounced saddle in the ridge. Beyond this the outcrop can be followed readily, and appears markedly stronger than at any other place north of the main ore-body. It contains much barite, also. When projected to the 600, with the same dip as the more southerly part of the vein, it lies about 350 feet to the north of the present 600 face. The recent improvement shown in the vein underground together with the stronger surface indications, convince me that it will be desirable to extend the 600 level northward into this new block. The proper directions have been given.

5- 504 South This work has advanced about 50 feet,

3- April 22, 1924

and the grade of ore disclosed has been somewhat better than was anticipated. If commercial ore extends for any distance in this drift it will be advisable to push out the sub-level and prepare for stoping a new block.

6- 401 Hanging Wall- The drift has advanced about 50 feet, the vein maintaining the same width and grade.

Very truly yours,

(Signed) Paul Billingsley

WALKER MINE

SITUATION AND RECOMMENDATIONS

FOR DEVELOPMENT WORK

March 5, 1924.

RESULTS OF RECENT DEVELOPMENT

Development work during the past few months has been restricted to three places - the north end of the 600 level, the sub-level just north of the main shaft, and the south end of the 700 level.

In the 600 north drift the vein has been followed for about 700 feet from the point where it was first struck. The face is now almost exactly as far north as the 300 north drift. The vein has remained strong and wide, but the grade has been almost entirely below 2%. One high grade bunch was encountered in No. 2 crosscut (613), but sideswiping has proved this to be only about 25 feet long by 20 feet wide. In the vicinity of crosscuts No. 4 (618) and No. 5 (620) the grade has averaged a little over 2%. This area is almost directly below (on the dip of the vein) the best portion of the vein on the 300 level, and a raise should ultimately be driven up in this region. For nearly 300 feet beyond 620 crosscut the grade remained below 2%. Beyond this point however an improvement can be noted. A rather strong north-south slip angles across the vein, and has permitted the descent of oxidation and some enrichment. In the 50 ft. length of vein developed beyond this slip to date, considerable sooty chalcocite can be seen, and the grade is somewhat better. It is to be

2- March 5, 1924

feared, however, that the improvement will be only local, in the vicinity of the oxidized slip.

The sub-level work was planned to develop a block of ground lying immediately north of the main Shaft Fault. There is a geometrical possibility that a wedge of the main orebody will be found on the lower levels in this block. The crosscut on the sub-level penetrated the fault, and disclosed from two to three feet of good ore lying on the hanging wall, in just the position proper for the tip of the anticipated wedge of vein. Unfortunately, a short distance farther on the crosscut encountered a series of cross faults, which may cut off the wedge of vein and drop it below the level. A very little additional work will prove this one way or the other.

In the 700 south drift the vein was successfully followed through an area of faulted ground, and has now been followed beyond in an unbroken segment for 60 feet. The face of the drift is now slightly south of the drill hole. The appearance of the vein is good, the width about 8 feet, and the mineralization of promising character. While the muck pile assays have averaged less than 2% the vein proper will probably run 3%. The drift has been driven partly in the footwall and the muck piles have included much waste. I believe that this southern vein will carry commercial ore a very short distance above the 700 level, and it is quite likely that the level itself will improve in grade as it extends southward.

3- March 5, 1924

RECOMMENDATIONS

It seems desirable to increase somewhat the per month footage of development. The present program requires about 350 feet. This can be raised to 500 ft or more without raising the current costs above the desired figure of \$3.00 per ton. The additional work can be done in part in places which will advance the date when new stopes will be available, and in part in places which will yield milling ore at once, and hence raise the daily tonnage available for the mill. These are all ends the attainment of which is advantageous. Accordingly the following recommendations are made:

(All others are hereby annulled)

1. 400 Level. Extend Hanging Wall drift (401) south on vein as long as vein remains definite and contains pay ore. Notify geological department if conditions change. Rock broken goes into stopes.
2. 500 Level South end of 504 drift. Open up vein by side-swiping east side of drift, then drift southerly on vein to and beyond large granite dike. Further directions will be given if necessary for the recovery of the vein beyond the dike. Rock broken goes into stopes.
3. 600 Level. Continue 616 drift north on present course, with crosscuts to foot and hanging wall every 100 ft. Rock broken goes to mill.

4- March 5, 1924

4. Sub-level. Continue north crosscut N  $55^{\circ}$  W to point 60 ft. from Sta. 89. Then crosscut S  $35^{\circ}$  W until through Shaft Fault. Waste.

5. 700 level - North End Extend 712 drift north with a course N  $30^{\circ}$  W for 470 ft. Waste.

6. 700 Level - South /End Continue 703 drift south on the vein. Crosscut to foot and hanging wall every 100 ft. Later on recommendations for a raise or raises in this area will be made.

Respectfully submitted,

Paul Billingsley

Salt Lake City

March 7, 1924

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December 12, 1924

Mr. J. O. Elton, Manager  
International Smelting Company  
OFFICES

Dear Sir:

Following are the recommendations for development at the Walker Mine brought up to date.

700 Level - South End.

After drift south from main tunnel has been extended far enough for switch, proceed with small drift for twenty-five feet; then x-cut south  $60^{\circ}$  west for a distance of thirty-five feet or to the vein if encountered in a shorter distance.

Sub-level Above 700

From shaft drift north on vein until cut by fault. Extend through fault, then parallel to fault on hanging wall side until vein is cut. Then drift north on vein.

700 Tunnel

Drift north on vein which shows in main tunnel 570 feet southwest of main drift.

600 Level - North End.

Side swipe to limits of ore showing in No. 2 north cross-cut. Start raise in best ore, continue raise until ore is cut by fault on foot wall, then notify geological department for further instructions.

2- December 12, 1924

600 Level- North End.

Continue drift on same course until well through fault, then turn due north. At a point 100 ft. beyond fault crosscut due east to hanging wall of vein unless fault is first encountered.

500 Level

Drift south on 5th level, first turning eastwardly to hanging wall of vein, then following this south to and beyond large granite dike at about 340'

Very truly yours,

Paul Billingsley

PB?CH

October 12, 1923

Mr. V.A. Hart, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Sir:

In accordance with the decision reached at yesterday's conference, I wish to make the following recommendations for development at the Walker Mine. It is understood that the work is to be prosecuted at the rate of approximately 300 feet per month.

1. Drift South on main vein from point of its intersection by 700 tunnel to granite contact. Subsequently explore fully in this area by cross-cuts and raises.

2. Continue exploration of shear zone at North end of 600 level by means of straight drift with cross-cuts in both directions at intervals of 100 feet. Drift should be continued  $N 20^{\circ} W$  from present face until and if the geological department authorizes a change in course.

3. Open sill to limits of ore in all directions from Cross-cut No. 2 East of North drift on 6th level. (Mr. Thayer's suggestion).

4. Extend 7th level beyond present North face with a course of  $N 55^{\circ} W$ , which places it parallel to the shaft fault and about 10 ft. in the hanging wall. Continue for about 200 ft. or until the first North fault is cut, unless ore is encountered sooner. If course of  $N 55^{\circ} W$  does not keep away from shaft fault, notify geological department.

2- October 12, 1924

5. Cross-cut 150 ft. into hanging wall on 7th level for purpose of establishing diamond drill station to test vein below this level. This cross-cut may be located with reference to convenience on 7th level, but should be preferably between No. 1 and No. 3 raises. Mr. Arrietta's suggestion as to placing cross-cut a few feet above level for convenience in loading big cars has no objections from the geological standpoint.

6. Drift South on 5th level, first turning Eastwardly to hanging wall of vein, then following this South to and beyond large granite dike at about 340 ft.

You may consider this letter as your authorization to start the above work.

Yours very truly,

Paul Billingsley

Geological Department  
International Smelting Co.

PB.L

September 14, 1923

Mr. J. O. Elton, Manager  
International Smelting Company,  
O F F I C E S

Dear Sir:

I have studied carefully the recommendations for the Walker mine submitted by Mr. Gidel. I return them to you with the following comments:

No. 1. This covers the program for the development of the north shear zone on the 600' level. At the time of my visit in April I made the following recommendation for this area;

"The drift should be run straight, with a course about N. 20<sup>o</sup> W - - - - Crosscuts should be run to foot and hanging wall at 100 ft. intervals."

This development scheme took into account the certainty that the vein itself would show minor bends and displacements, and was intended to avoid the confusion sure to follow if the drift was allowed to wind around in search of the ore. The straight drift would take us through the desired area, and the crosscuts would find any ore of consequence. More important still, this scheme would have left the workings in good shape for any further development desired.

When Mr. Gidel reached the Walker mine in July he found

2- September 14, 1923

that the above program was not being followed, the drift having diverged from the allotted course in an effort to work over to a richer part of the vein. In fact it became ultimately a crosscut. Mr. Gidel therefore advised Mr. Hart verbally to start a fresh drift upon the best ore showing in this semi-crosscut, which has been done, the new drift now being probably 50 feet long. Recommendation No. 1 is essentially to the effect that this drift be continued on its present course, with crosscuts at 100 ft. intervals.

If our effort had been to continually keep the drift in the best part of the vein, Mr. Gidel's instructions would have been the best possible. The advantages of this aim, however, have been proved to be neutralized by the disadvantages of the resulting crooked drifts, which do not give a proper idea of widths and grade, and furthermore are seldom properly placed for the installation of chutes.

To follow out Recommendation No. 1 is to lose the advantages of regular openings and a consistent development plan, although the desirability of these features has been recognized in previous discussions. On the other hand, to go back to the point where the drift diverges from the original course means the duplication of about 100 ft. of work. It is a choice of evils, and on the whole I suppose we might as well forget the spilt milk and start again as recommenced by Gidel. It is important however, to make sure that in the future similar detours are avoided. The occasional presence of small slips

3- September 14, 1923

should not be the excuse for abrupt changes in the course of the drift.

No. 2. Unnecessary at present. This ore will be taken out in the natural course of extracting the shaft pillar east of No. 2 Raise.

No. 3. This is the same as one of my recommendations in April, and I endorse it fully.

No. 4. This embodies the idea contained in my April recommendation that the 700' level be extended beyond the fault in search for a faulted segment of the vein. It should be amended to exclude the subsequent drifting, which is a separate problem to be considered by itself. Therefore let it read as follows:

"Extend main drift on 7th level northwest on hanging wall side of fault, keeping fault on left hand side of drift for a distance of about 150 ft. unless the vein is encountered sooner."

No. 5 This is a good recommendation, and will develop a good looking parallel vein. It need not be taken up, however, till the general situation makes it desirable.

No. 6. Endorsed. The foot note suggesting a vertical shaft does not take into account the fact that we do not know as yet whether a shaft will ever be needed. The first thing to do is follow the best ore down.

Very truly yours,  
Paul Billingsley

Level 600  
Mine Walker  
No. 1.  
XXXXXXXXXXXXXXXXXX

RECOMMENDATIONS FOR DEVELOPMENT WORK

A.C.M. CO. GEOLOGICAL DEPARTMENT

DESCRIPTION

Drift N 20 W. from face Oct. 12 in northernmost crosscut, and drive crosscuts to footwall and hanging wall of vein at intervals of 100 feet.

OBJECT

To develop mineralized zone beneath that explored on the 300 level north. Few spotty assays above 3% copper were obtained above on the Third level. Since the main ore body shows so much improvement below the Third level it is possible that the north mineralized zone will contain ore on the lower levels.

Date of recommendation 9/12/23

Recommended by M. H. Gidel

Approved by Paul Billingsley

Subject to my letter 9/14/23 to J. O. Elton

RECOMMENDATIONS FOR DEVELOPMENT WORK  
A.C.M. CO. GEOLOGICAL DEPARTMENT

| Level 600  
| Mine Walker  
| No. 2  
| |||

DESCRIPTION

Drift northwest on ore showing on north side of Raise  
No. 2 on 600 level.

OBJECT

To develop ore to cut-off on northwest fault. A length  
of probably 70 to 100 feet of ore may be found here and will deter-  
mine whether or not short crosscuts should later be driven southwest  
from points in lateral north of cut-off.

Date of recommendation 9/12/23

Recommended by M. H. Gidel

RECOMMENDATIONS FOR DEVELOPMENT WORK  
A.C.M. GEOLOGICAL DEPARTMENT

Level 700 Adit  
Mine Walker  
No. 3  
|||||

DESCRIPTION

From main 700 crosscut extend drift southeast through fault zone; recover vein probably thrown to right, and drift on same to granite contact. Crosscuts to foot and hanging wall of vein may be necessary at 100 foot intervals.

OBJECT

To develop the Walker Vein in new territory. Seven feet of 2.1% copper ore was found in a diamond drill hole 200 feet from the main adit crosscut. The vein at this point shows increasingly copper content and the proposed work may develop a new ore shoot.

Approximate amount of work 600' of drifting to granite contact.

Date of Recommendation 9/12/23

Recommended by M. H. Gidel

Approved by Paul Billingsley

RECOMMENDATIONS FOR DEVELOPMENT WORK  
A.C.M. GEOLOGICAL DEPARTMENT

Level 700 Adit  
Mine Walker  
No. 4  
|||||

DESCRIPTION

Extend main drift northwest on hanging wall side of northwest fault or N. 55 W if fault departs sufficiently to left to allow this course. Then drift northwest on vein 450 feet to projection of ore which shows above on 600 level in crosscut running northeast from station 657.

OBJECT

To recover the faulted Walker Vein and to ultimately develop the ore "pipe" which probably extends up to the ore showing in the vicinity of 329 crosscut. This drifting on the main level would permit of more economical raising and stoping of ore pipe.

Approximate Amount of work 150' or more of crosscut plus drifting.

Recommended by M. H. Gidel

Approved by Paul Billingsley

as appended.

RECOMMENDATIONS FOR DEVELOPMENT WORK  
A.C.M. GEOLOGICAL DEPARTMENT

Level 700 Adit  
Mine Walker  
No. 5  
XXXXXXXXXX VIII

Description

Drift northwest on vein showing in main crosscut at a point 65 feet north of station No. 3000. The vein is 580 feet south of main drift northwest.

OBJECT

General development of a vein which might contain an ore shoot. A 60 foot exposure in the main crosscut assays 1.8% copper.

Approximate amount of work 300 feet or more

Date of recommendation 9/12/23

Recommended by M. H. Gidel

Approved by Paul Billingsley

RECOMMENDATIONS FOR DEVELOPMENT WORK  
A.C.M. CO. GEOLOGICAL DEPARTMENT

Level 700 Adit  
Mine Walker  
No. 6  
IIIIIIIIII II

Description

At a point midway between Raise No. 2 and Raise No. 3 sink a winze on vein to a depth of at least 200 feet. Drive appropriate drifts and crosscuts to adequately develop the ore shoot below the adit level.

Object

To develop the downward extension of the ore shoot at a point where the best ore shows on the tunnel level. Note: if considerable development be planned below the tunnel level, Mr. Hart's plan of sinking a vertical shaft from a point on the foot wall side of the vein between the granodiorite dikes would be more desirable. The shaft would thus be located away from old stopes and in an area relatively dry. The bulk of water contained in the ore shoot north of the dike might be excessive and costly to handle with sinking pumps in the winze as proposed. Regular level development from a vertical shaft could then be done at any desired depth.

Date of Recommendation 9/12/23

Recommended by M. H. Gidel

Approved by Paul Billingsley

WALKER MINE

Excerpts from letter to

V. A. Hart

May 1, 1923

DEVELOPMENT

There are three main areas to explore:

1st - The north mineralized zone already explored on the 5rd level. This was weak and low grade on the 3, only at two places exceeding 3%, but the main orebody shows so much improvement below that level that it is quite possible the north mineralized zone will contain ore on the lower levels. The present work on the north end of the 600 is well calculated to test this possibility. The drift should be run straight, with a course about  $N 20^{\circ} W$ , which will keep it within the vein. Crosscuts should be run to foot and hanging wall at 100 ft. intervals.

2d - The southward extension of the main mineralized zone. The main orebody becomes weak and lean at its south end, and remains so for 700 or 800 ft, but on the tunnel level there are indications at the extreme south of an improvement in grade. It is possible that still farther south the zone will open out into another orebody. This should be determined by a thorough exploration of the vein south of its intersection with the adit tunnel. The vein must be recovered beyond the fault which there cuts it off, and followed by a drift, with frequent crosscuts to the walls.

2- May 1, 1923

3d - The main orebody terminates to the north against a north-west fault, the intersection following closely the line of No. 2 raise. On the lower levels at least this fault looks as if it were post mineral. There may therefore be a chance of recovering the vein beyond it.

Other faults have complicated the situation, and have made it doubtful if the missing segment can be found on the upper levels. On the Tunnel level, however, the chances are better, and I recommend that this level be extended beyond the North-west Fault for about 150 ft.

There is also a slight possibility that the impoverishment found on the tunnel level will not persist below. This should be tested by a winze, sunk from the tunnel level in the best part of the ore shoot. It should be sunk for a depth of at least 200 ft, with appropriate crosscuts and drifts, in order to make a conclusive test.

All the work above recommended is indicated in red on the accompanying composite map.

Very truly yours,

Paul Billingsley

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

613

L. F. BAYER, MANAGER

March 9, 1937

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

Dear Sir:

Please find enclosed geological sketches for February development, a March 1st sheet for addition to the available ore reserve, also tables and long sections for preparing the 1937 Ore Reserve booklet.

Very little development work was done during February, but I am sure that this next month will show a decided change. Now that the company is on its feet again, Mr. Bayer has talked of starting all headings and raises that have promise of finding ore. He has asked me to plan a development program that will be similar to the system in vogue at Butte wherein a ton of ore will be found and prepared for every ton that is mined. I think that by tabulating the life of each prepared stope, and estimating the development required to prepare known orebodies, we will be able to work out something very practical. This can be carried in conjunction with monthly operating ore reserve sheet.

In regards to the Statement of Ore Reserves---Perhaps I have gone too far in trying to prepare a comprehensive estimate that is possible for the operating department to comply with, in regard to both tonnage and grade, but I have tried to make it into something with which we will not fool ourselves. I am not aware of what excuses will have to be made to the Stockholders and Directors, but from the experience of this past year, it looks as though it is better to be in a position to credit exploration work with the finding of new ore rather than make excuses for

ore blocks that have failed to materialize after being fully explored. When large tonnages of high grade ore from the Central, North and 712 Orebodies were available, many lower grade stopes could be run for volume rather than grade without lowering the mill heads appreciably. Now that this better ore is gone, we must confine our stoping to closer limits and therefore measure our ore blocks accordingly. I trust that these changes will meet with your approval.

Our monthly reports show that there is quite a discrepancy between breakage, production and mill head assays. In the past, for practical purposes, production assays have been reduced by  $12\frac{1}{2}\%$  to correct for the difference between these and the mill heads. Experience during the past year indicates that the error in Piute is greater than that of the rest of the mine, also, we have been fairly well assured that Piute has in reality, produced at about 1.00% Cu. rather than the anticipated 1.28% Cu. So with these figures in mind, a ratio is worked out wherein production assays are corrected to fit the mill heads:

Total tons to mill (1936) = 464,065 at 1.247% Cu. (Mill assay) and 1.460% Cu. (Production Assay).

Tonnage from Piute = 219,922 tons @ 1.00% Cu. (Actual).

Tonnage from the rest of the Mine = 244,143 tons @ 1.469% Cu. (Actual).

Production assay for Piute = 1.25% Cu. for rest of mine = 1.606% Cu.

Therefore  $\frac{1.00}{1.25} = .800$  correction factor for Piute and  $\frac{1.469}{1.609} = .914$  correction factor for the rest of the mine.

These factors have been applied to all assays as shown on the long sections but were not used directly in the cases of ore in place. Here, a re-calculated assay was made for each block and then corrected rather than just multiplying the pre-existing assay by its factor. In a good many cases the averages had previously been cut to some extent, so to guard against any possible double reductions, all blocks were re-checked.

There are two sets of long sections enclosed; one to be photostated and the other showing color distribution. I would like to have the colored set returned if it is convenient, for I would like to keep a record of the figures shown on them. The other set may be colored and retained there for reference. I would also like a booklet of the reserves after they are made up.

I sincerely hope that the changes made in the ore statement will be accepted and that it will prove to be dependable.

Very truly yours,

Seth K. Droubay

SKD  
W

Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

611-5

WALKER MINE

DEVELOPMENT WORK

May, 1923 - December, 1939

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## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

December 22, 1939

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

Dear Tom:

Since diamond drill Holes No. 36 and 37 have proven that the footwall vein exists as far south as the 712 main Orebody, it appears to be more logical to develop it on the 600 Level from 693ExcW than from 668EDS as Mr. Sales recommended a couple months ago. Either case would necessitate a certain amount of work in waste, but 693E affords a short tram and service directly from the shaft, while all work done from the other side necessitates climbing from the 700 Level. Also, we would like to open up the ore that was cut in 692E.

Very truly yours,



SKD:SW

S. K. Droubay

cc - Mr. Sales  
Mr. Dugan

C O P Y

December 28, 1939.

Mr. S. K. Droubay,  
Walkermine, California.

Dear Droubay:

I have received a copy of your letter of December 22nd., addressed to Tom Lyon. In your letter I note it is proposed that you extend Crosscut 693E to 517 vein projected, rather than drift from 668E as recommended in my letter of a former date.

As to how you open up these veins after their positions are learned by drilling or otherwise, is a matter for you and the management to decide. I have no objection to doing the work as you have laid it out.

I am pleased to note the favorable results obtained in drill hole #37.

Yours very truly,

RHS:MBS

cc-Messrs. C.E. Weed  
Tom Lyon ✓  
J.F. Dugan

R. H. SALES

December 26, 1959

Mr. S. K. Droukey  
Walker Mining Company  
Walkerville, California

Dear Rod:

I am in receipt of your letter of December 22 regarding development work on the 600 level.

On Mr. Dugan's copy of this letter there is a note by Mr. Hartmann in which he states that both he and Mr. Warren approve doing the work in the manner that you suggested. I have talked the matter over with Mr. Dugan and we both agree that for operating reasons it will probably be better to do the work as outlined in your recommendation No. 21.

If Mr. Sales has any reasons for asking you to do the work as he originally suggested, you will hear directly from him.

Very truly yours,

Tom Lyon

TL:R  
CC: Mr. Sales  
Mr. Dugan

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

December 19, 1939

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

Dear Tom:

The accompanying composite map of the 712 Orebody shows to date development of the footwall vein.

Holes No. 29, 30, 32, and 35 indicate fairly strong mineralization on the 1000 Level and from the looks of 471CDS and the barren quartz from Hole No. 35, it appears that Hole No. 36 has cut the vein near its southern fringe. Hole No. 37 is being driven to cut the vein 210 feet further south with the hopes that enough mineralization will be found to justify driving a main haulage level out this way so that the ore from this fissure will not have to be hand trammed. If hole No. 37 shows a fairly strong mineralization, then a third hole will be fanned from the end of 628C.

It appears as though we will have at least 90,000 tons of 1.25% plus available ore that could be produced through a haulage level that will involve about 200 feet of drifting in waste and the rest in vein material.

As our large 820 and 820A and 1080 Stopes will be finished in a very few months, it is of vital importance that we replace these places. The North Orebody pillars will furnish part of this, but Mr. Hartmann is anxious that some plan be gotten underway, wherein, we can prepare to produce this footwall ore both above and below the 700 Level. We would appreciate very much if you would talk this over with Mr. Sales and Mr. Dugan and advise us as to what may be done. We had thought that starting a 700 Level drift about 200 feet south of the 712 Hoist room and extending 1055BxcW would be logical procedure.

The 692C has cut about thirty feet of nice looking rock and I think we can start a stope on this from the footwall of 705B Stope. It should be better than 1.50% rock. It looks as though we should crosscut from the face of 690C and if nothing is opened up we should stop it. *md*

In projecting the footwall mineralization south of 706A Winze to the 1200 Level, 1202DS will not have to be turned west to hit it. The fault steepens below the 1000 Level and the footwall vein should be almost straight ahead.

Very truly yours,

*S. K. Droubay*

S. K. Droubay

SKD:SW

Encl.

cc - Mr. Dugan, Mr. Sales

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

H. M. HARTMANN, MANAGER

December 1, 1939

Mr. Reno H. Sales, Chief Geologist  
Anaconda Copper Mining Company  
25 Broadway  
New York City

Dear Sir:

Diamond drill Hole No. 35 has been completed to a depth of 269 feet, but no ore was disclosed. This hole cut the 517 vein approximately 200 feet southeast of where Hole No. 32 cut it, but the quartz carried practically no sulphides. The hole was driven South 68 degrees east from a point twenty feet back from the face of the short 10425x06 and cut the vein from 220 to 242 feet.

The drill was moved to Hole No. 29 which will be extended to a depth of 500 feet which should be ample to cut the 60 degree dipping fissure that carries the best looking vein material as exposed on the 600 sub-level. We exposed this fissure again by crosscutting from the extreme north end of the sub-level, as suggested in your latest development recommendations, and although we have cut no quartz to speak of there is considerable alteration of the schist and a dissemination of chalcopyrite and hornite in places.

We will move the drill to the sub-level just as soon as Hole No. 29 is completed.

Very truly yours,



SKD:GW

S. K. Droubay

cc - Mr. Lyon  
Mr. Dugan

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



New York, N. Y.  
November 16, 1939.

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

Dear Tom:

I am forwarding under separate cover our set of Walker maps. Please have these brought to date. I am particularly interested to have the drill holes put on accurately in ink, and all pencil lines that look like drill holes should be erased. As far as possible, will you have the drill information indicated on the respective drill holes.

I am enclosing herewith copies of my recent telegrams with respect to drilling at the Walker. The mineralization in hole #30 looks interesting.

Yours very truly,

A handwritten signature in cursive script that reads 'Reno H. Sales'.

RENO H. SALES

RHS:F  
ENC.

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

VICE PRESIDENT MANAGER

October 25, 1939

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

Dear Tom:

Please find enclosed geological sketches of development during the first half of October, also records of three completed diamond drill holes.

The 471CDS is still in fair vein material, but the 500 Level mineralization is rather hard to follow. A couple rounds of sideswipe were taken out and further exploration will be done more to the west. 903BDS is being widened to allow for the double track necessary for slushing and in the extreme south end, a parallel drift is being driven for better operating conditions. Work to facilitate pumping on the 1200 Level is not yet complete, so no exploration work will be done there for a couple weeks yet.

Diamond drill holes No. 21 and 27 are also completed, but as cost information is not yet available on them, they will not be sent in until later. The cost figures were arrived at by dividing all distributable cost of drilling by the total feet drilled, and proportioning it to the holes:

Total miscellaneous cost of drilling to Oct. 1	\$1,064.16
Cost of pipe and sump labor for two surface holes	350.00
To be charged to total footage	714.16

Total feet drilled to October 1	2659
Total feet to be drilled on surface	2200

$$\frac{\$714.16}{2659} = \$0.26858 \text{ per foot to be charged to drilling up to Oct. 1.}$$

$$\frac{\$350}{2200} = \$0.15909 \text{ per foot additional charge for surface hole.}$$

<u>HOLE NO. 20</u>	805 feet drilled, no station cut.	
	805 x \$0.26858 =	\$216.21
	Due McClintock Co.	1048.25
	Total	\$ 1264.46

$$\frac{\$1264.46}{805} = \$1.5708 \text{ per foot}$$

<u>HOLE NO. 22</u>	428 feet drilled. <i>No station.</i>	
	428 x \$0.26858 =	\$114.95
	Due McClintock Co.	535.00
		\$649.95 ÷ 428 = \$1.5186 per ft.

Mr. Tom Lyon, #2

October 25, 1939

HOLE NO. 23 209 feet drilled. *No station*  
209 x \$0.26858 = \$ 56.13  
Due McClintock 261.25  
\$ 317.38 ÷ 209 = \$1.5186 per ft.

Very truly yours,

*S. K. Droubay.*

S. K. Droubay

SKD:SW

Encl.

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November 27, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your letter of November 24, enclosing the log records and cost data on diamond drill holes finished during the month of October.

Very truly yours,

TL:P

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

October 24, 1939

Mr. C. E. Weed, Manager of Mines  
Anaconda Copper Mining Company  
25 Broadway  
New York, New York

Dear Sir:

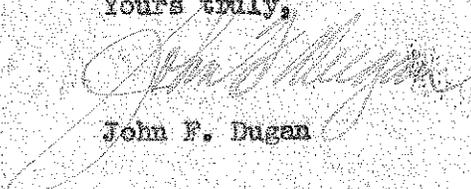
Enclosed is a longitudinal section of the Walker Mine orebodies prepared on a scale of 200' = 1". This is a convenient section for ready reference.

The pillars are colored in red with the assays indicated. The numbers of the raises and stopes are also on the section.

Mining the pillars in 660 Stope has been started and we will follow the plan suggested by you on your last visit.

Pillars are also being mined in the South End of the South Orebody and 712 Orebody just above the 700 Level.

Yours truly,

  
John F. Dugan

JFD:SW

Encl.

cc - Mr. Elton

C O P Y

October 24, 1939.

Mr. J. F. Dugan, Manager of Mines,  
820 Kearns Building,  
Salt Lake City, Utah.

Dear Jack:

I am in receipt of a copy of a memorandum on certain development suggestions made during my visit at the Walker Mine. I am enclosing a copy of same and wish to state that it correctly sets forth my recommendations.

Enclosed herewith are geological sketches made by Droubay to illustrate these development projects. Will you please have three copies made of same, sending one to me, one to Droubay, and one to Tom Lyon, to whom I am sending copies of this letter and memorandum.

Yours very truly,

RHS:MBS  
Encls.

Reno H. Sales

cc-Tom Lyon ✓  
S. K. Droubay

( C O P Y )

WALKER MINING COMPANY  
WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L.F. Bayer, Manager.

October 18, 1939.

Memorandum on Development

Mr. Sales spent October 17 and 18 at Walkermine, and recommended that the following projects be carried out at the earliest possible convenience.

Project No. 1

To Determine the Behavior of the 517 Vein Below  
the Extreme South Portion of 471 CDS.

Sections indicate that the vein, if it extends to the 500 and 600 levels, should lie in the approximate position shown on the sketch.

A. Further prospecting along 517B should be done a little more to the west, as indicated on the sketch, keeping in mind that the main vein may continue S 45° W.

B. <sup>should</sup> If the ore continues along the 500 level, then prospecting from the 600 level, be carried out by extending 668E in a southerly direction along the weak fissure. See sketch.

Project No. 2

Prospect the North End of the 712 Orebody, where the  
Several Footwall Fissures Join the Main Vein.

There are several streaks of ore on the 600 sub, 600, 500 and 400 levels that should be opened up to determine whether or not this zone contains enough ore to warrant stoping.

400 Level:

A. Extend 484CxcW far enough to expose the extreme footwall split of the fissure, or to be sure it does not extend this far.

B. Open up the mineralized zones that lie along the first two fissures cut by 470CxcW, and follow out in both directions.

500 Level:

544B may have to be extended to meet 535B, if the fissure proves productive above.

October 18, 1939.

600 Level:

A. 649D should be extended far enough to cut all of the fissure zone.

B. All mineralization in this zone should be opened up the same as recommended for the 400 level.

C. A crosscut should be driven from the main vein to the end of 618E to obtain another assay cross section of this footwall area. 648D averaged 1.07% Cu.

600 Sub-level:

699B should be extended in a northeasterly direction to determine the extent of the mineralization. Part of this work may be done by exploring from 604BDN.

Project No. 3

Explore the small high grade vein exposed in 450CDN near 768ER, by raising and by drifting south into the 710 Orebody.

Project No. 4  
Diamond Drilling

A. It was decided that the footwall country of north Piute had been sufficiently explored by the old surface diamond drill holes Nos. 3, 8, 10, 11, 12, and 14, and that therefore drill hole No. 23, drilled west from the end of 904BDN, should not be continued beyond its present 209 foot depth. The objective of cutting the footwall quartz exposed in 900CxcW was obtained.

B. A 200 foot hole should be driven south of hole No. 25 to obtain another cross section of the footwall mineralization exposed by holes No. 22 and No. 25 drilled from the 1200 and 1000 foot levels of the Central Orebody.

C. Two short holes may be drilled from the face of 1017DN to locate some trace of the 712 mineralization.

Respectfully submitted,

S. K. DROUBAY.

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIAL. F. BAYER, MANAGER  
~~XXXXXXXXXXXX~~

October 24, 1939

Mr. G. E. Weed, Manager of Mines  
Anaconda Copper Mining Company  
25 Broadway  
New York, New York

Dear Sir:

Mr. Sales spent October 17 and 18 at the Walker Mine. During his visit Messrs. Hartmann, Droubay and myself went over the maps with him. Attached is a memo prepared by Mr. Droubay of Mr. Sales development recommendations.

Mr. Sales was interested in the 517 Fissure and suggested other work on mineralized zones in this area. Some of this work has been started. The rest will follow when operating conditions permit.

The diamond drilling program is following Mr. Sales recommendations.

Yours truly,

  
John F. Dugan

JFD:SW

Encl.

cc - Mr. Elton

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

October 18, 1939

Memorandum on Development

Mr. Sales spent October 17 and 18 at Walkermine, and recommended that the following projects be carried out at the earliest possible convenience.

## Project No. 1

To Determine the Behavior of the 517 Vein Below the Extreme South Portion of 471 CDS.

Sections indicate that the vein, if it extends to the 500 and 600 levels, should lie in the approximate position shown on the sketch.

A. Further prospecting along 517B should be done a little more to the west, as indicated on the sketch, keeping in mind that the main vein may continue  $S 45^{\circ} W$ .

B. If the ore continues along the 500 level, then prospecting from the 600 level should be carried out by extending 663E in a southerly direction along the weak fissure. See sketch.

## Project No. 2

Prospect the North End of the 712 Orebody, where the Several Footwall Fissures Join the Main Vein.

There are several streaks of ore on the 600 sub, 600, 500 and 400 levels that should be opened up to determine whether or not this zone contains enough ore to warrant stoping.

## 400 Level:

A. Extend 484CxeW far enough to expose the extreme footwall split of the fissure, or to be sure it does not extend this far.

B. Open up the mineralized zones that lie along the first two fissures cut by 470CxeW, and follow out in both directions.

## 500 Level:

544B may have to be extended to meet 555E, if the fissure proves productive above.

October 18, 1939

600 Level:

A. 649D should be extended far enough to cut all of the fissure zone.

B. All mineralization in this zone should be opened up the same as recommended for the 400 level.

C. A crosscut should be driven from the main vein to the end of 618E to obtain another assay cross section of this footwall area. 649D averaged 1.07% Cu.

600 Sublevel:

699B should be extended in a northeasterly direction to determine the extent of the mineralization. Part of this work may be done by exploring from 6049DN.

Project No. 3

Explore the small high grade vein exposed in 4500DN near 768BR, by raising and by drifting south into the 710 Orebody.

Project No. 4  
Diamond Drilling

A. It was decided that the footwall country of north Plate had been sufficiently explored by the old surface diamond drill holes Nos. 3, 6, 10, 11, 12 and 14, and that therefore drill hole No. 23, drilled west from the end of 9048DN, should not be continued beyond its present 209 foot depth. The objective of cutting the footwall quartz exposed in 9000x07 was obtained.

B. A 200 foot hole should be driven south of hole No. 25 to obtain another cross section of the footwall mineralization exposed by holes No. 22 and No. 25 drilled from the 1200 and 1000 foot levels of the Central Orebody.

C. Two short holes may be drilled from the face of 1017DN to locate some trace of the 712 mineralization.

Respectfully submitted,

S. K. Droubay

ANACONDA COPPER MINING CO.

C O P Y

May 23, 1939.

Mr. S. K. Droubay,  
Walker Mining Co.,  
Walkermine, Calif.

My dear Droubay:

In reply to your letter of May 19th, addressed to  
Mr. Gidel.

While I do not feel that we could find enough mineral showing in the basalt covering at the north end of the Walker, to sustain a mineral location, I think we should cover the ground with locations about as you indicated on your map. This should be done in order that we might have whatever possessory rights that might be flowing to such location. If we extend our 900 level, or any other level, northerly on the Piute Vein, we could claim discovery at such time as our drift or drifts reached a point beneath one of these surface locations on basalt.

Under the above plan, I think we would be able to hold the ground as against anyone else trying to locate it. Instead of covering the entire area indicated by blue line locations on your map, we might add smaller groups of locations, keeping the same within, say two or three claim lengths of our present boundaries, and it might not be necessary to cover so much ground in an east-west direction as you indicate.

Yours very truly,

RHS:KM

cc: Messrs. Elton  
Lyon ✓  
Bayer

RENO H. SALES

September 11, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Mr. Droubay:

In Mr. Lyon's absence I wish to acknowledge your letter of September 12 enclosing therein geological sketches and a classification sheet for development during the month of August, also a record sheet of diamond drill Hole No. 22 from 0 to 313 feet.

Very truly yours,

Nell E. Preece

August 28, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I have your letter of August 25 together with the geological sketches showing the advance for the first 22 days of August; also the ore reserve tabulation.

I will ask the Purchasing Department to take care of the compass.

Very truly yours,

TL:F

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

August 25, 1939

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

Dear Tom:

Please find enclosed geological sketches for development during the first twenty-two days of August also an available ore tabulation for the Month of July.

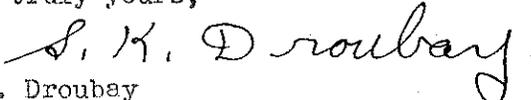
It looks as though the vein is dying out in 471CD(517 fissure). There is considerable disseminated chalcopryrite in 485CxcE, but the west crosscut is very barren. 484C will be continued west until the footwall fissure that is exposed on the 600 sub level is cut. This should be within the next twenty or thirty feet.

The two diamond drill outfits are here and set up. We started the underground machine in the face of 1201DN where 300 foot holes will be drilled into the footwall and the hanging wall. They are in seventy-two feet with the hanging wall hole with several one quarter inch stringers of sulphides exposed.

The surface machine will start drilling today and will prospect the vein about 550 feet ahead, and fifty feet below the present 904BDN face. The rig was moved from the more northerly position and 904BDN stopped as per telephone conversation to Mr. Bayer.

I will send a copy of core log to you and Mr. Dugan regularly, and will advise you immediately when anything of importance comes up.

Very truly yours,



S. K. Droubay

P.S. Would it be too much bother to have the purchasing department send me a Brunton and case and bill me personally for it? It is for my brother to use in his school work, and a good used one would serve however, a new one will do very well.

August 16, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I have your letter of August 8 together with the enclosed geological sketches showing the development work and mining operations for the month of July.

Very truly yours,

TL:P

Tom Lyon

August 11, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your letter of August 8 together with the geological sketches showing the development work done at the Walker mine during the month of July.

Very truly yours,

TL:P

Tom Lyon

Example 1. - We use this method.

ENGINEER-FOREMAN

F. 812 10-8-37--25M

NUMBERING

Stopes, Square Set	1-199	Level	600-799
Rill	200-299	Raises	800-899
Timber Bill	300-399	Misc.	900-999
Back Fill	400-499	Shafts	1000-
Stull	500-599		

WEEK ENDING .....19

.....Walker.....MINE

CONTRACT CALCULATIONS

CONTRACT 1

PLACE

4 hours overtime

SHIFTS

2 @ 4.75

BREAKING	PRICE	TIMBERING	PRICE	SHOVELING	PRICE	MISC.
		01				1 man 1/2 shift timber & misc. day = 9.50 + 1.19 = 10.69
		1069 cubic ft				Timbering 10.69
		.x01				wages 10.69
		10.69				<u>0.00</u>

In this case one man gives up his bonus to pay other men's over-time pay.  
company pay \$ 9.50

No Bonus.

Rate Per Day

4.75



## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

July 22, 1939

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

Dear Tom:

The enclosed geological sketches cover development for the first half of July.

The 1200 level station and pockets are almost completed, then 1201 drift north will be extended as rapidly as possible. One crew will work on this heading and another will work on the pump sump.

The footwall vein (517) is opening up again in 484CxcW. The ore is running better than 2% and it appears that we will open up a nice block of ground above the 400 level. I think this crosscut should be extended to the projection of the mineralized fissure that is exposed on the 600 sub-level below. This fissure should be around forty feet west of the present face.

The 620EDN is being driven over 720B Stope. 620B Stope will be prepared directly above. 983BDN is being driven for a service and will connect with 797 service shaft. Stopes are being prepared along 930BDN.

I would like to have your opinion on this contract business. Our accounting department has been instructed, by the Salt Lake Office, to figure the time-and-one-half money in a manner which looks wrong to me. The enclosed contract calculation sheets will show why. One man works regular time and the other works half of his shift on overtime rate.

We are instructed to deduct wages (including the extra money for overtime) from the contract's total earnings, then divide what is left by the number of shifts to get the daily bonus. Time and one half also applies on bonus for the hours overtime. Example No. 1 shows how one man's bonus is used to pay his partners overtime.

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Mr. Tom Lyon, #2

July 22, 1939

As I understand it, the company is to be penalized for allowing a man to work over forty-four hours per week, which means they should pay the \$1.19 for the one half shift of overtime instead of its being deducted from the contract earnings. Example No. 2 shows how the same contract pays off if base rates are used, and the company pays the overtime.

We have some contracts in the shaft that involve considerable overtime and during this last period one of them made a difference of almost one dollar a day to the earnings of the men, depending which way the money is figured.

As per Mr. Warburton's instructions we are using method No. 1, which is much to the advantage of the company. As I have charge of measuring and figuring contracts, it is up to me to explain the results to the men, and I would like to be sure this method will pass inspection. I would appreciate it very much if you would check this over with Mr. Hunter and advise me if we are right.

Two more weeks of brushing will see our new claim lines finished, then it will take another two weeks to survey and lay out the corners. I have two men staying out at the camp doing the brush work and one survey crew spends about three days a week out there.

Very truly yours,

*S. K. Droubay*

S. K. Droubay

SKD:SW

P. S. I am going to be in San Francisco from Monday to Friday of this week, to see the fair.

July 17, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your monthly reports and also the cost data  
which you have submitted on the various stoped in the mine.

Very truly yours,

TL:P

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

July 12, 1939

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

Dear Tom:

Please find enclosed available ore tabulation for the months of May and June, also some cost data that may be of interest to you.

There was a slip up and your May reserve sheet was not sent in. The cost data was compiled to give the operating department a picture of how much margin they had in mining each of the ore blocks.

Unless a person is familiar with the stopes, and the stages of their development, these figures may be misleading in certain places, especially where a stope is first being put into operation. However, it may be used as a general guide.

Mr. Sales spent a day going over the geological maps with me. I suppose he wanted to refresh his memory in regards to the future possibilities of Walker Mine for the purpose of considering the extension of its credit to see it through a development program.

The gold property at Downieville is not ready for inspection as yet. I am going to look at a large gravel deposit next week. It belongs in part to a fellow who works here at the mine, and he and his family want to sell it. Lindgren examined the property in 1916 and wrote a very favorable report on it. If it looks too big for the several fellows that are going to make the trip to handle, it may be worth while for the International to look over.

Very truly yours,



S. K. Droubay

SW

Encl.

June 25, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

This will acknowledge receipt of your letter of June 20  
enclosing geological sketches covering development done during  
the first half of June.

Very truly yours,

TL:P

Tom Lyon

# WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

June 20, 1939

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

Dear Tom:

The accompanying geological sketches cover development done during the first half of June.

Nothing of any particular interest has turned up. 471CDS looks quite good and is opening up a larger body of ore than was exposed on the 500 Level.

The 900 Level heading going north from Piute and 900CxcW are about the same. The crosscut shows a little chalcopyrite and the face today shows indications of a little more quartz.

The 1200 level is rather slow in getting started and it will be a couple of weeks yet before the pockets are finished and the drift under way.

I have started John Canada on the preliminary work of locating additional claims. As soon as he can carry his survey out, we will set lines and start brushing paths for laying out the corners.

I have been in touch with Smith from Downieville and will visit the gold property right after the first of the month when a lease expires.

Very truly yours,



S. K. Droubay

SKD:SW

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June 12, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your letter of June 7 together with geological sketches and classification sheet for development during the month of May; also prints showing mining operations with respect to the ore bodies, and a memorandum letter on diamond drilling applicable to the Walker mine.

Very truly yours,

TL:P

Tom Lyon

# WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

May 18, 1939

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

Dear Tom:

Please find enclosed geological sketches of a development during the first half of May.

The 482xcE in the 712 Orebody shows that the vein is still strong, and 471C will be turned so we can prospect along it going S.W. The 904B and 900C, north of Piute, show disseminated chalcopryrite, with the development of quartzzy zones.

The 706A Winze is dewatered to the bottom and work on the 1200 station and skip pockets has begun.

Very truly yours,

*S. K. Droubay*

S. K. Droubay

SKD:SW

Encl.

February 27, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your letter of February 23 together with the enclosed geological sketches. I also note the comments you have made on development work.

Very truly yours,

TL:P

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

February 23, 1939

Mr. Tom Lyon  
Chief Geologist, I S & R Co.  
818 Kearns Building  
Salt Lake City, Utah

Dear Tom:

Please find enclosed geological sketches of development carried on during the first half of February.

The footwall vein of the 712 Orebody is rather interesting. The 400 level did not assay as well as I had expected, and it is very badly broken up with slips and old dikes. However, the crosscut 477C has exposed several feet of well mineralized vein material under the main footwall slip, and we may get some ore there yet. This mineralization contains a good deal of bornite.

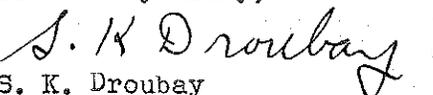
Although the 600 level has looked discouraging, the last crosscut (673E) to the north and the present face of 619E expose fairly strong mineralization. The structure is not definite, but quartz, chalcopyrite, and occasional blebs of bornite occur associated with joints and weak fissuring. 467C is in the vein south of the old stoped country, and although the vein is very well defined, it is not so high grade (1% plus). 475C may show better ore near the hanging wall.

I received the copy of Mr. Gidel's letter and note what he has to say. With regards to drifting north along the Piute 900 level, we may have to drift a good deal west of north if we keep under all splits of the footwall faulting. This is apparent on the 800 level where the trend is almost N 30° W at the most northerly exposure.

Virgil Chamberlain arrived today, and I will soon have him lined out. I have been rather rushed since Broadwater left.

Kindest regards.

Yours very truly,



S. K. Droubay

S. K. Droubay

May 11, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am in receipt of your letter of May 7 regarding the development work during the month of April; also sketches showing the geology, and stope maps showing the location of the ore stoped during the month.

Very truly yours,

TL:P

Tom Lyon

## ANACONDA COPPER MINING Co.

C O P Y

April 25, 1939.

Mr. Seth E. Droubay,  
Walker Mine,  
Plumas County, Calif.

Dear Mr. Droubay:

I received your letter of April 21st with geological sketches showing recent advances made in 471-C drift and 904-B drift in the Walker Mine, also copy of recommendation No. 22, and three tabulations of available ore reserves in the mine on February 1st, March 1st and April 1st.

I note the following monthly decreases in ore reserves to be:

During	January	22,399 Tons
"	February	22,399 "
"	March	3,994 "

which, on April 1st leaves a total reserve of 1,338,922 tons, averaging 1.27% copper.

I concur with your suggestion to drive 471-C drift southwesterly beyond 509-B Mine on the extension of 712 Ore zone, in preference to drifting on the weaker vein structure exposed in the southwest faces on the 500 and 600 levels. Last summer, Mr. Kildale and I traversed the surface above this mineralized zone and concluded that it would be desirable to drift some distance to the southwest towards a plug of diorite porphyry, which terminates a highly silicified, iron-stained, sheared zone that cuts across the schist. The porphyry plug is approximately 1600 feet, S. 50° W. from the face of 471-C drift.

I also note that Recommendation No. 22 proposes a plan for the normal development on the 900 level of the downward projection of the south

ANACONDA COPPER MINING CO.

Mr. Seth K. Crosby--2

C O P Y

April 26, 1959.

portion of the Piute orebody. This proposed work should make available a considerable tonnage of ore.

I find that our maps do not show the position of diamond drill hole No. 10, drilled from the surface and in the area north of the Piute orebody. Did this hole cut any mineralization? Judging from the north-west strike of the northernmost ore found in 904-B north drift, it may be advisable to soon turn a crosscut to the west from the north face of the drift to test the possibility of the vein structure extending in that direction.

I am glad to know that Virgil Chamberlain is rendering good work.

Yours very truly,

MHC:KM

cc: Messrs. Kelley

Ward

Salas (Inc. sketches and  
Lyon Apr. 1, ore reserve  
Dugan Statement).

M. H. CIDEL

( COPY )

WALKER MINING COMPANY  
WALKERMINE  
PLUMAS COUNTY, CALIF.

April 21, 1939.

Mr. M. H. Gidel, Asst. Chief Geologist  
Anaconda Copper Mining Company  
Butte, Montana

Dear Sir:

Please find enclosed several geological sketches that may be of interest to you, a copy of recommendation #22 as submitted to Mr. Lyon and Mr. Dugan for approval and the last three monthly tabulations of our available ore reserves which should bring up to date the set I had been sending to Mr. Sales from time to time.

The composite sketch and section of the 517 footwall fissure zone of the 712 Orebody gives a picture of development to date. 619E has been stopped for the time being. Mineralization was so weak and scattered, that it seemed wiser to see what the extension of 471C beyond 559B raise would bring. Although we have ample information and mineralization to warrant a raise being driven, in preparation of mining ground under the 500 level, we may have to extend 654 ExcNW to determine whether the vein steepens or pinches below the 500 level.

The 904B DN from the Piute Orebody is well under way. We are out of the grey, sheared fissle schist and into a more crystalline formation. It may be wise to extend a crosscut to the footwall slip to be sure we do not get too far away from it.

If 904B is continued on its present course for 300 feet it will be 500 feet in the hanging wall of the ground explored by surface diamond drill hole #10.

Recommendation #22 gives a general picture of how the ore along the Piute 800 Level pinches to the south. Although it is questionable whether strong mineralization will extend to the 900 Level, there will be a substantial tonnage of ore to be mined from below the 800.

Vergil Chamberlain is getting along very nicely.

Very truly yours,

(Ed.) SMITH K. DROUBAY

sw

April 25, 1939

Mr. J. F. Dugan  
General Superintendent of Mines  
International Smelting and Refining Company  
O f f i c e s

Dear Sir:

Development recommendation No. 22 for the Walker mine, as submitted by Mr. Droubay, has been received and after consultation with Mr. Lyon has been approved by this department.

This recommendation calls for the extension of 903 B drift south in the Piute ore body for a distance of approximately 400 feet. Its purpose is to develop the south end of the Piute ore body under 886 drift south. Although the mineralization in the present face of 903 B drift south is low-grade, the ore extended in 886 drift for a distance of approximately 400 feet beyond this point. Thus there is certain to be some stoping ground in this area between the 800 and 900 levels and the ore may again come down to the 900 level ahead of the present face of 903 B drift. Thus the carrying out of this recommendation should add to the assured ore reserves and will open up another stoping area in the Piute ore body.

Very truly yours,

MEK:P

M. B. Kildale

April 24, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I have your letter of April 20 together with the sketches;  
also recommendation No. 23 which is in reference to extending No.  
903 B drift south on the Pluta ore body.

Very truly yours,

TL:P

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

April 20, 1939

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

Dear Tom:

Please find enclosed the geological sketches of development during the first half of April also recommendation #22 with regards to extending 903E DS of the Piute Orebody.

We have stopped 619ExcW because the mineralization is so weak, and because it has been extended far enough to allow for a raise that will enable us to mine the ore below 517 Stope. It may be better to explore the extension of this fissure zone on the 500 or 400 foot levels where the vein is much stronger. We will continue 471C along the vein beyond 559B raise.

The 904B DN was extended 36 feet and has passed from the grey, sheared fissile schist into a more crystalline formation. It will probably be wise to extend a crosscut to the footwall slip to be sure we do not get too far away from it. If we try to follow the slip, the drift is run crooked, and has to be timbered.

Mr. Bayer has informed me that he must receive an OK from the Mining Department in Salt Lake before any new development project is started.. I will submit copies of such recommendations to you and to Mr. Dugan, including the estimated cost, and the approval or rejection could be sent in by letter making reference to the recommendation number. I will assume that any approved recommendation received by Mr. Bayer has had your OK.

Very truly yours,



S. K. Droubay

SW

# WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

April 14, 1939

L. F. BAYER, MANAGER

Mr. Tom Lyon  
Chief Geologist  
Salt Lake City, Utah

Dear Sir:

With reference to the proposed development program for Walkermine submitted March 1, 1937, and to your letter of approval of March 31, 1937 (copies of which were sent to Mr. Dugan and Mr. Bayer), I wish to report the stage of each of the 23 proposals as of April 1, 1939.

Not Started	Finished	Started, Then Stopped	Going	Remarks
		1 *		Pending profitable operation of 775 Stope, Margin \$1.40 to mine
		2		700A Winze not running. Work to be run from South Orebody
3				700A Winze not running
4				" " " "
5				No water for upper South Orebody
6 *				700A Winze not running
7				Soon to be started along 1200 Level
9		8		Stopped in favor of diamond drill holes
		10		No hoist in central shaft
			11	Soon to be continued
			12	930B will be extended. 904 is in waste
		13 *		675E, 467C & 706E are being run
14				Raise in low-grade ore, should be finished
	15			Inaccessible at present. May soon be explored
	17	16		Should be going
	18			
	19			
	20			
	21			Being stoped
			22	Long range to north going. South soon to be started.
23				Waiting for results on 900 Level.

\*Grade of expected ore and cost of mining unattractive at current metal prices

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Mr. Tom Lyon

-2-

April 14, 1939

Development progress reports sent in each month have made reference to the development program, and each project completed has developed enough ore, or given ample information to justify the expense in running it.

Respectfully submitted,

*S. K. Droubay*

S. K. Droubay

cc-Mr. J. F. Dugan  
cc-Mr. L. F. Bayer

Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

April 10, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Spring Garden, California

Dear Red:

I am in receipt of your letter of April 5 together with the sketches showing the progress made in development during the month of March; also maps that show the advance and the mine workings.

I am also in receipt of your letter of April 7 regarding the supposed strike which you visited recently.

Very truly yours,

TL:P

Tom Lyon

March 20, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

Thanks for your letter to Mr. Lyon with the geological sketches for the first half of March. The advance in 930 B drift north, 886 drift south and the work on the 517 vein all still look interesting. Your recommendation No. 21 looks O. K. and has been filed.

I presume Tom will write to you about the mining property himself.

Best regards,

Very truly yours,

MBK:P

M. B. Kildale

# WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

March 18, 1939

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

Dear Tom:

Please find enclosed geological sketches of development for the first half of March, recommendation No. 21 with regards to the Central 900 Level, and a letter with regards to a mining property.

The 619E shows fairly good mineralization. It seems to be associated with weak fissuring and is disseminated throughout the country rock with considerable alteration, rather than confined to a definite quartz vein.

We have on file several letters and reports about properties by the same person, Voss, that MacLellan had to do with in 1930-1932.

Respectfully yours,

*S. K. Droubay*

S. K. Droubay

SW

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March 14, 1939

Mr. S. K. Droubay  
Walker Mining Company  
Walker Mine, California

Dear Red:

Mr. Lyon has requested me to acknowledge receipt of your last letters which were accompanied by the geological notes and progress maps for the Walker mine for the month of February. We have noted all your comments on the same.

The new mineralization exposed in 673 E. crosscut in the 517 ore zone looks interesting. I hope that you can raise on it to the 500 level and can follow it southwesterly in case the 517 ore shoot should rake in that direction. I note also that 471 C drift on this vein did not connect directly with the top of 559 B raise. Didn't the vein extend to the top of 559 raise or is there a split here?

The mineralization in the 888 drift south on the Piute ore zone seems to have become weaker and more scattered south of 828 A and 829 A crosscuts but I believe some additional drifting and crosscutting according to your previous recommendation should be done here before this exploration is stopped.

Regarding the northward exploration on the 900 level in the Piute ore body and your question to Mr. Lyon concerning the direction to be taken by the 904 B heading, we are quite sure that Mr. Gidel's idea is to continue the drift northerly along the main footwall slip. Such a drift will serve to prospect the footwall fault and at the same time determine if there are any other faults or slips branching off to the northeast in the footwall of the one already known. I note that the last geological notes on the 800 drift north show the footwall

2- Mr. S. K. Droubay

March 14, 1939

fault swinging slightly more to the northwest but it nevertheless should be prospected for some distance to the north on the 900 level as long as it shows any strength or any mineralization. Your original recommendation sheet for the extension of 904 B drift north shows the proposed drift following close to the northward projection of the footwall fault and I believe that this is Mr. Gidel's recommendation also. The question in your mind is apparently whether to continue 904 drift along the main footwall fault or to drive it northerly on a north-south line and to crosscut at intervals in two directions - both to the footwall fault and to the east split. I believe that following the fault will more satisfactorily prospect the footwall zone and the total amount of crosscutting will of course be the same by either method; and I believe that this was what Mr. Gidel meant in his letter to Mr. Lyon. I would therefore start the new drift along the fault which it has previously been following and if this should not be according to Mr. Gidel's ideas it can be swung off into a north-south line later.

Trust that the new long-range development work here and on the 1200 level will soon be under way and that you are gradually succeeding in getting enough stopes started to relieve the pressure for mill feed.

Hope that all goes well and here's sending best regards from Mr. Lyon and myself.

Sincerely yours,

MBK:P

M. B. Kildale

cc: M. H. Gidel

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

March 7, 1939

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

Dear Tom:

Please find enclosed geological sketches and progress sheets for development during the Month of February.

Because of storms we have been unable to make prints showing the location of progress. I will send these, the available ore reserve sheets and the general discussion, just as soon as the prints are made.

We are not progressing with our development work fast enough, but I hope to see the longer range headings under way before long. It looks like it will be two or three weeks before the 900 Level north from the Piute is going, and about that long before 1017 DN, under the 712 Orebody, gets started. The 706A winze is not yet dewatered below the 1100 Level, and it will take some time to put in skip pockets after they get the water down and the winze in shape to the 1200 Level.

We produced 26,361 tons of ore last month and broke 22,894 tons, a difference of 3,467 tons.

It appears as though too much is being sacrificed to keep the mill going at its present rate.

There is very little advance shown on the sketches more than was shown on the ones I sent in on February 22. However, these show total advance for the month in ink. The 675A Ds and 930 B DN are intermediate levels exploring the 620A and 930 blocks of the north orebody. The 467C is outlining ore above 720B Stope. The 600 and 400 level workings of the 712 footwall fissure show very little change. The 673E xce was side swiped and it appears as though we may expose enough mineralization to raise to the 500 level on. The 886 DS is out of ore, but is stilled mineralized.

Very truly yours,

*S. K. Drouby*

S. K. Drouby  
191SW  
Encl.

February 16, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

I am enclosing copy of a letter from Mr. Gidel dated February 8 regarding the prospecting of the northerly extension of the Piute ore body on the 900 level.

Very truly yours,

Tom Lyon

TL:P

Encl.

February 11, 1939

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

Your letter of February 6 with accompanying maps and geological notes has been received and Mr. Lyon has passed it on to me with a request to acknowledge receipt of same.

Your new recommendations Nos. 19 and 20 have been noted and hope that they succeed in developing some good stoping ground in their respective blocks.

With regard to the exploration work as shown by your geological notes the only suggestion I can offer is with regard to the 600 level development on the 517 vein. As mentioned in your letter and shown on your notes it looks as though the weak mineralization in 619E drift was turning off to the southwest through the end of 619 E drift and 673 E crosscut. However it seems to me that while we are working here the short crosscut opposite 673 E should be continued southeasterly back to the fault cut in 686 E crosscut and that this fault should be drifted on to the south at least as far as the end of 517 drift. As shown on your composite sketch this fault would seem to be the same as that which bounds the ore on the east side along the south end of 517 drift.

I suppose that you will continue 471 C drift beyond 559 B raise if the ore continues to the southwest. Note that the grade of ore from 471 C drift is lower in copper than that found in the raises from the 500

2- Mr. Seth K. Droubay

February 11, 1939

to the 400 level.

Hope that all goes well and that you new assistant from Butte arrives soon.

Best regards,

Very truly yours,

MBK:P

M. B. Kildale

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



Feb. 8, 1939.

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

Dear Tom:

Thank you for copy of Mr. Kildale's letter concerning the recommendations for development at the Walker Mine, which were submitted by Mr. Droubay.

With limited funds for development, Recommendation No. 15, proposing development of the North Orebody on the 1200 level, undoubtedly is the most important one to start first, to determine whether or not commercial grade ore extends beneath the best ore exposure on the 1000 level.

In regard to prospecting the northerly extension of the Piute orebody on the 900 level (Recommendation No. 18), I believe it would be best to extend the drift on its present course through all possible footwall branches of the fault, 100' to 200' into solid ground before turning a crosscut to the east to test for a right hand displacement or an eschelon branch of the vein structure. In the stope at the north end of the 700 level, I noted "drag" blocks of vein material to the right, implying a throw in that direction. The first test crosscut should give some idea of structure to the north, and thereby govern the plan of prospecting beyond that point; which might be considerably different from that sketched on the Recommendation Sheet. Any lateral that is to be driven should not be too distant from the vein structure.

Should a diamond drill be available at the mine, I would suggest that some drilling be done in lieu of crosscutting off the new lateral. If ore should be found in any of these projects, drifting should be done on same in preference to lateral work, unless heavy, wet ground should preclude making desired advances.

In other words, the recommendations as written suggest a plan for development, subject to whatever changes it may be desirable to make as the work proceeds, based on the relation and character of vein and fault structures.

Yours very truly,

*M. H. Gidel*

MHG:S

cc - Mr. Reno H. Sales  
Mr. C. E. Weed

February 3, 1939

Mr. M. H. Gidel  
P. O. Box 26  
Butte, Montana

Dear Muri:

I have asked Mr. Kildale to write a letter concerning the recommendations for development at the Walker mine which were submitted by Mr. Droubay, a copy of which were sent to you.

I am sending you a copy of Mr. Kildale's letter regarding the matter for your consideration.

Very truly yours,

Tom Lyon

TL:P

Encl.

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



Feb. 1, 1939

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

Dear Tom:

I received a copy of S. K. Droubay's letter of January 25th, descriptive of and including four recommendations for development work as planned on the 800, 900 and 1200 levels of the Walker Mine. These are good recommendations, especially the proposed work on the vein to the north and south of the shaft on the bottom or 1200 level.

In discussing the matter with Mr. Weed a few weeks ago, he requested that drifting be done on any ore that may be cut in new foot-wall or hanging wall test crosscuts, in preference to continuing the laterals parallel to an orebody.

Yours very truly,



M. H. GIDEL

MHG:KM  
cc:Mr.C.E.Weed

## INTERNATIONAL SMELTING AND REFINING CO.



GEOLOGICAL DEPARTMENT  
KEARNS BUILDING

TOM LYON

SALT LAKE CITY, UTAH

January 28, 1939

Mr. Tom Lyon

O f f i c e s

Dear Sir:

The following comments are submitted on the last four development recommendations for the Walker mine (Nos. 15, 16, 17, 18) as submitted for your approval by Mr. Droubay in his letter of January 25, 1939.

Recommendation No. 15

This is the recommendation applying to the drift northerly on the 1200 level off of 1082 winze. It follows the general plan already agreed upon and appears to be satisfactory with the possible exception of the two pairs of crosscuts designated to be run from this drift at distances of 140 and 340 feet from the winze. If no strong mineralization is encountered along the fault zone in the crosscut easterly directly off the winze station, it is believed that the north drift should be pushed as rapidly as possible along the footwall of #1 fault until a point under 1060 A drift and on the downward projection of the north ore body is reached -- without delaying this drift to run the first two sets of crosscuts as shown on the recommendation sheet. When a point about 600 feet north of the winze is reached, crosscutting of the zone should be done to locate the downward projection of the north ore body along which, if found, the drift can be continued to the north as shown.

Recommendation No. 16

This applies to a drift southerly from 1082 winze on the 1200 level. Its general plan is suitable but if sufficient development funds are not available at the present time for both the north and south drifts on the 1200 level, this proposed drift to the south should be left in abeyance until the north drift is completed. The ore zone of the Central ore body on the 1000 level in this area is narrow and it is believed that the northerly development drift under the north ore body is more important than this drift to the south.

January 28, 1939

Recommendation No. 17

This applies to the continuation of the south drift on the 800 level in the Piute ore body. It now appears possible that the southern limit of the commercial ore on the 800 level has been reached in the vicinity of 828 A and 829 A crosscuts. However, as shown on the recommendation sketch, the 886 drift on the 800 level has reached the area below the point where the Piute vein splits into two branches on the 700 level, one split following the footwall fault to the south, the second branch turning to the southeast. Thus the 800 level drift should be continued along the footwall fault as shown on the sketch and the proposed crosscut easterly at a point about 100 feet ahead of the present face should be driven a sufficient distance to be sure of cutting any southeasterly split as shown on the 700 level. The mineralized zone shown as being cut in D.D. hole #15, drilled from the sub-level above the 700, may represent this easterly branch. Recommendation as outlined covers these possibilities except that the easterly crosscut as shown should probably be extended about 50 feet further than shown.

Recommendation No. 18

This recommendation applies to the prospecting of the area north of the present Piute ore body on the 900 level off of the Piute shaft, according to the general plan already agreed upon. It is recognized that in this area two possibilities must be tested - (1) the continuation of the ore zone northerly along the flat footwall fault and (2) the presence of other ore bodies along the northeast-striking fault which appears to branch off the footwall fault in this area. This fault may itself be mineralized or may be a fault of the "cross-over" type which will lead to another ore body parallel to but lying north and east of the Piute ore body. The recommendation as submitted calls for the continuation of 904 B drift northerly along the footwall fault, with frequent long crosscuts easterly toward the northeast branch fault. It appears to the writer that these long crosscuts are neither so economical nor so satisfactory as would be a drift directly along the northeast fault. Such a drift will require less footage than the long crosscuts and give more geological information. The geological mapping of the two drifts along the footwall and northeast faults should detect any branching mineralized zones which may split off into the area between the two drifts. Hence it is recommended that this recommendation be revised to call for a drift along the northeast fault and the elimination of the long crosscuts off of the extension of 904 B drift.

Respectfully submitted,



M. B. Kildale

MBK:P

cc: Mr. M. H. Gidel  
Mr. J. F. Dugan

January 29, 1939

Mr. Tom Lyon  
O f f i c e s

Dear Sir:

The following comments are submitted on the last four development recommendations for the Walker mine (Nos. 15, 16, 17, 18) as submitted for your approval by Mr. Droubay in his letter of January 25, 1939.

Recommendation No. 15

This is the recommendation applying to the drift northerly on the 1200 level off of 1082 winze. It follows the general plan already agreed upon and appears to be satisfactory with the possible exception of the two pairs of crosscuts designated to be run from this drift at distances of 140 and 340 feet from the winze. If no strong mineralization is encountered along the fault zone in the crosscut easterly directly off the winze station, it is believed that the north drift should be pushed as rapidly as possible along the footwall of #1 fault until a point under 1060 A drift and on the downward projection of the north ore body is reached -- without delaying this drift to run the first two sets of crosscuts as shown on the recommendation sheet. When a point about 600 feet north of the winze is reached, crosscutting of the zone should be done to locate the downward projection of the north ore body along which, if found, the drift can be continued to the north as shown.

Recommendation No. 16

This applies to a drift southerly from 1082 winze on the 1200 level. Its general plan is suitable but if sufficient development funds are not available at the present time for both the north and south drifts on the 1200 level, this proposed drift to the south should be left in abeyance until the north drift is completed. The ore zone of the Central ore body on the 1000 level in this area is narrow and it is believed that the northerly development drift under the north ore body is more important than this drift to the south.

January 28, 1939

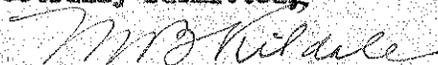
Recommendation No. 17

This applies to the continuation of the south drift on the 800 level in the Piute ore body. It now appears possible that the southern limit of the commercial ore on the 800 level has been reached in the vicinity of 828 A and 829 A crosscuts. However, as shown on the recommendation sketch, the 896 drift on the 800 level has reached the area below the point where the Piute vein splits into two branches on the 700 level, one split following the footwall fault to the south, the second branch turning to the southeast. Thus the 800 level drift should be continued along the footwall fault as shown on the sketch and the proposed crosscut easterly at a point about 100 feet ahead of the present face should be driven a sufficient distance to be sure of cutting any southeasterly split as shown on the 700 level. The mineralized zone shown as being cut in D.D. hole #15, drilled from the sub-level above the 700, may represent this easterly branch. Recommendation as outlined covers these possibilities except that the easterly crosscut as shown should probably be extended about 50 feet further than shown.

Recommendation No. 18

This recommendation applies to the prospecting of the area north of the present Piute ore body on the 900 level off of the Piute shaft, according to the general plan already agreed upon. It is recognized that in this area two possibilities must be tested - (1) the continuation of the ore zone northerly along the flat footwall fault and (2) the presence of other ore bodies along the northeast-striking fault which appears to branch off the footwall fault in this area. This fault may itself be mineralized or may be a fault of the "cross-over" type which will lead to another ore body parallel to but lying north and east of the Piute ore body. The recommendation as submitted calls for the continuation of 904 B drift northerly along the footwall fault, with frequent long crosscuts easterly toward the northeast branch fault. It appears to the writer that these long crosscuts are neither so economical nor so satisfactory as would be a drift directly along the northeast fault. Such a drift will require less footage than the long crosscuts and give more geological information. The geological mapping of the two drifts along the footwall and northeast faults should detect any branching mineralized zones which may split off into the area between the two drifts. Hence it is recommended that this recommendation be revised to call for a drift along the northeast fault and the elimination of the long crosscut-off of the extension of 904 B drift.

Respectfully submitted,



M. B. Kildale

MEK:P

cc: Mr. M. H. Gidel

Mr. J. F. Dugan

Mr. Tom Lyon

-2-

January 25, 1939

Any comments or suggestions as to the proposed development will be very gladly received.

Respectfully yours,

*S. K. Droubay*  
S. K. Droubay

cc-Mr. Gidel

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

January 25, 1939

Mr. Tom Lyon  
Chief Geologist  
818 Kearns Bldg.  
Salt Lake City, Utah

Dear Tom:

Please find enclosed four recommendations for development work at Walker Mine. These have been more or less under consideration for some time, and now that the mine will soon be in condition to have this work started, I have drawn up the 200 scale sketches.

As the No. 1 hanging wall fault steepens below the 1000 level, being 70° between the 1000 and 1100 levels, it is questionable just how it will act to the north and south. Recommendations No. 15 and No. 16 were drawn up by projecting structure to the 1200 level and making it fit the known position of the fault at 706 winze.

Recommendations No. 17 and No. 18 have to do with Piute. No. 18 is to prospect for ore north of our present extreme exposures of mineralization as recommended by Mr. Sales in his letter of October 27, 1937, a copy of which was sent to you. The slip coming in from the northeast just ahead of the present face is projected down from the 600, 700 and 800 levels. It may be well to prospect back through this from a point several hundred feet ahead if no mineral is found in the zone indicated. No. 17 is to keep the 800 level from taking off on an east split, as happened on the 700 and 600 levels. It looks as though we are at the end of our commercial ore here, but we should continue going south as long as we are able to drift on ore. When this fails, any further prospecting could be done from the 700, where the level is not so congested for handling waste. We have located hanging wall with 450° raises, which cost much less to run than do crosscuts.

All copies of the annual ore reserves were sent to you, and the additional long section that you requested will be sent in as soon as Ed Broadwater can finish making it up.

In the past, Mr. Sales requested that I keep him posted on our development work here. He wrote me on January 6th that he was going to South America and that in communicating geological matters to you I should send a copy of the letters and maps to Mr. Gidel at Butte. I will also send Mr. Dugan a copy of the recommendation maps, and tell him they are subject to your approval.

ANACONDA COPPER MINING CO.

C O P Y

Jan. 17, 1939.

Mr. S. K. Droubay,  
Walker Mine,  
Plumas County, Calif.

Dear Sir:

On my recent trip to New York City, Mr. Sales handed me your letter of December 21, 1938, in which you summarized the results of prospecting done at the Walker Mine on the several recommendations for development that were submitted last summer. So far the work has apparently found nothing of importance, the most encouragement being indicated by the possibility of finding some ore in future advance in 619 E Crosscut beyond the small seams of chalcoppyrite and bornite then exposed in the face.

A few days ago, I reviewed the development situation at the Walker with Mr. Lyon. We are hopeful that the drifting as planned on the bottom or 1200 level, will find a good grade and width of ore in the North orebody beneath that showing on the 1000 level at points 600 to 1200 feet northwest of the shaft.

I also wish to acknowledge receipt of a copy of the Table of Ore Reserves at the Walker Mine, dated December 1st, <sup>1938,</sup> to January 1st, 1939, which you addressed to Mr. Reno H. Sales at this office.

Yours very truly,

MHC:KM

CC: Messrs. Hobbins  
Sales  
Wood  
Lyon ✓

M. H. GIZEL

# ANACONDA COPPER MINING COMPANY

Butte, Montana

## Geological Department

RENO H. SALES, Chief Geologist

M. H. GIDEL, Asst. Chief Geologist



New York, N. Y.  
January 5, 1939

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

Dear Tom:

Weed, Gidel and I have discussed the Walker situation. We agreed that the 1200 level should be extended to the north as rapidly as possible, and you are authorized to go ahead with that development. As I understand it, the shaft is filled with water to a distance below the 1100.

I think a little study is necessary on the matter of the location of the north work on the 1200; that is, as to whether we should first pick up the vein and drift on it, or lay out a lateral on lines in order to reach our main objective as quickly as possible. Speed is the essence of the thing and I think the manner of doing the work is for you, Dugan and the mine management at the Walker to decide.

Incidentally, it is surprising that our Walker maps and sections do not show that the shaft is down to the 1200 level.

Yours very truly,

RENO H. SALES

RHS:D

CC - Messrs. C. E. Weed  
J. F. Dugan

# ANACONDA COPPER MINING COMPANY

Butte, Montana

## Geological Department

RENO H. SALES, Chief Geologist

M. H. GIDEL, Asst. Chief Geologist



New York, N. Y.  
December 30, 1938.

AIR MAIL

Mr. Tom Lyon

820 Kearns Building

Salt Lake City, Utah.

Dear Tom:

I have your letter of December 28th on the Walker development.

We are giving the matter consideration and will advise you shortly.

Yours very truly,

RENO H. SALES

RHS:F

December 23, 1938

Mr. Rene H. Sales  
Room 1726  
25 Broadway  
New York City, N. Y .

Dear Rene:

I have your letter of December 24th, regarding the Walker 1200. The 1200 level is 279 feet vertically below the 1000.

As stated in my previous letter it is 900 feet between the shaft and the vertical projection of the southern end of the north ore body.

The proposed hanging wall cross cut on the 1000 level is 379 feet. This, plus the station, plus several holes, will cost as much as a drift north on the 1200. The time element is an important factor as we are going to need some new stopes in a hurry. I wish to urge that no drilling be done from the 1000 and that the 1200 be pushed out beneath the north ore body. If ore is encountered on the 1200, then before any further shaft sinking is done, it would be well to drill first.

I hope you have recovered from your cold.

With kindest personal regards, I am

Very truly yours,

Tom Lyon

TL/S  
cc. Mr. Dugan

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



New York, N. Y.  
December 24, 1938.

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

Dear Tom:

I have re-read your letter of December 8th on proposed Walker mine developments. Is it a fact that the 706 shaft is down to the 1200 level? I had the impression that the 1100 was the bottom. How far is the 1200 below the 1000?

If the shaft is to the 1200 and there can be any assurance that the level will be pushed rapidly to the north, your suggestion might be the best one.

As you know, I have two things definitely in mind for the Walker, one is the 900 drift north on the Piute, and the other the determination of the behaviour of the north orebody below the 1000 where it now shows to the best advantage in 1017 drift. As far as I am concerned, the important thing is speed but I want my ideas to be whatever will fit best with operating conditions.

Very truly yours,

*Reno H. Sales*  
RENO H. SALES

RHS:F

279  
Vertically  
100  
349  
8 shaft

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December 23, 1938

Mr. Seth K. Droubay  
Walker Mining Company  
Walkermine, California

Dear Red:

Mr. Lyon has requested that I answer your letter of December 16 and acknowledge receipt of it together with the progress map, geological sketches and table of available ore reserves.

I have looked over these data and your accounts of development work, noting the new additions to the available ore reserves in 825 and 835 blocks. I like the new arrangement of the tabulation and the including of the 710 ore body with the 712 ore body.

I note that there were no geological notes on 855 E crosscut west and 978 B drift north. Although these are service drifts for stopes think we should have geological notes on any new workings which will show on our maps here. During the coming winter am going to try and get our big 100 scale set of geological maps completed by the girls here and then will have a chance to check over all our data.

Sent your 200-scale set of maps to you by express this week and hope they arrived in good condition. Also sent you the colored ore-reserve long-section which you inquired about in your letter to Miss Hurst which she received today.

Regarding the prints of the monthly progress maps and long sections, of which you sent three copies with the last report, hereafter we will need only two copies of such. One will go in our files here as usual; one will go into Mr. Dugan's files.

With regard to the re-location of the Clover group of claims I will take that matter up with Mr. Lyon and will let you know later. We surely should protect ourselves along the northern extension of the Piute zone north of the September Morn claims and in the area between there and the Clovers. Is the ground just to the north of our present holdings in the September Morn area open yet or has it been located?

Best regards from Mr. Lyon and myself.

Sincerely yours,

MBK:P

M. B. Kildale

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



New York, N. Y.  
December 23, 1938.

AIR MAIL

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

Dear Tom:

From Dugan's letter to Weed I take it that it is not clear what I had in mind when I wrote that we approved the hanging wall crosscut on the 1000 ft. level of the Walker mine.

It seemed to us, after careful consideration, that Droubay's suggestion of diamond drilling downward from the 1000 ft. level was the quickest way to learn something of the behaviour of the north orebody in depth. It seemed to us too long a time to wait until the 1100 ft. level could be driven northerly to the position of the proposed crosscut on the 1000. It appeared best, therefore, to get the down drilling from the 1000 suggested by Droubay started as quickly as possible.

While I think the down drilling from the proposed 1100 level crosscut may be desirable later, I hesitate to load that much expense on the mine at this time, furthermore, if the holes proposed from the 1000 level do not find better ore conditions in that part of the mine, it is extremely doubtful if it will be worth while drilling in that low grade portion of the vein below 706 shaft.

Mr. Weed is writing Dugan with reference to buying a drill for the mine. Since we will have to contract the deep holes now being considered, I think it would be much better to lay out everything in the nature of short holes that we could possibly want done and turn such work over to the contractor. I am sure the Walker mine will never have enough current drilling work to justify the expense of its own drilling outfit.

Very truly yours,

RENO H. SALES

RHS:F

CC: Mr. C. E. Weed.

# ANACONDA COPPER MINING COMPANY

Butte, Montana

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



AIR MAIL

New York, N. Y.  
December 17, 1938.

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

Dear Tom:

We have considered the Walker Mine development proposals. For the present, we approve the hanging wall crosscut on the 1000 foot level to be driven from 1017 Drift at a point just to the north of coordinate 15800 and as indicated on Droubay's map in green color.

We think this work should be started immediately.

As to other development proposed by Droubay, this matter will be given further consideration. For the present, however, we do not approve of the work on or from the 1100 foot level as outlined by Droubay.

Very truly yours,

RENO H. SALES

RHS:F  
CC: Mr. C. E. Weed.

## MINING DEPARTMENT

## INTERNATIONAL SMELTING AND REFINING COMPANY

818 KEARNS BUILDING

SALT LAKE CITY, UTAH

SUBJECT:

December 19, 1938

AIR MAIL - SPECIAL DELIVERY

Mr. C. E. Weed, General Manager of Mines,  
Anaconda Copper Mining Company,  
25 Broadway, Room 1726,  
New York City.

Dear Sir:

Tom Lyon received a letter today from Reno Sales regarding Walker development.

Mr. Sales said that both of you had approved the hanging wall crosscut, on the 1000 foot level to be driven from 1017 D, at a point just to the north of coordinate 15,800, and as indicated on Droubay's map in green color.

We also said that you did not approve the work on or from the 1100 foot level as outlined by Droubay.

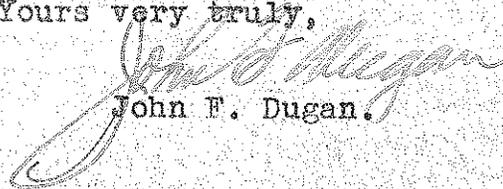
The crosscut just north of the 15,800 coordinate was laid out primarily for a diamond drill setup to prospect the downward projection of the ore body.

Mr. Lyon and myself are in somewhat of a quandry, as Mr. Sales did not say in his letter whether or not you intended to do any drilling.

If no drilling is contemplated, there is no use crosscutting at this particular point.

Will you please advise.

Yours very truly,

  
John F. Dugan.

JFD:H  
CC: TL.

Original to you by airmail.

## MINING DEPARTMENT

## INTERNATIONAL SMELTING AND REFINING COMPANY

818 KEARNS BUILDING

SALT LAKE CITY, UTAH

SUBJECT:

December 17, 1938

AIR MAIL

Mr. C. E. Weed, General Manager of Mines,  
Anaconda Copper Mining Company,  
25 Broadway,  
New York City.

WALKER MINING COMPANY

Dear Sir:

Enclosed is a copy of letter received from Mr. L. F. Bayer to which is attached a report from Mr. S. K. Droubay, Mine Geologist, showing the possibilities of using a small diamond drill for short hole prospecting work.

Mr. Droubay's report lists 39 possible holes to drill, or a total of 11,700 feet of drilling.

If, as Mr. Droubay suggests, diamond drilling is substituted for crosscutting the walls in 1017 and 904-B, it would keep one small drill busy and effect quite a saving in development expenditures, as much crosscutting would be eliminated.

If you remember, you suggested that we could determine the width of the various ore bodies by diamond drilling the walls with a small outfit while we were driving the raises. You thought this would be cheaper than the present method of crosscutting.

We think a small diamond drill will pay for itself within a short time.

Yours very truly,

John F. Dugan.

JFD:H  
CC:JOE  
TL ✓

C  
O  
P  
Y

WALKER MINING COMPANY

WALKERMINE, CALIF.

December 14, 1938

Mr. J. F. Dugan,  
Gen. Supt. of Mines,  
Salt Lake City.

Dear Sir:

Enclosed is report showing possibilities for the use of a small diamond drill. The amount of work will probably be enough to keep a drill busy for two years, and no doubt there will be other places where it can be used if more development work is done.

The figures gotten up by Mr. Droubay do not include holes from stope raises to locate foot wall and hanging wall, as suggested by Mr. Weed when he was out here.

If we should get an appropriation for drilling equipment I am of the opinion that we can pick up a good used machine here in California for about half the original cost.

Yours very truly,

(s) L. F. Bayer,

Manager.

December 14, 1938

Mr. L. F. Bayer,  
Manager.

In checking over short range prospecting applicable to a light-weight diamond drill, I find there are at least 39 places where drilling would give us desirable information. These holes might well average 300 feet in depth, therefore this figure is used to estimate total footage.

The 11,700 feet of drilling represented in such a program would not necessarily replace that many feet of cross-cutting, but it would take care of testing many places that have been recommended for prospecting in the past, and still remain as doubtful areas. It would settle definitely where to run drifts and where not to run them. The following tabulation gives a general location of the holes. For more exact information see the 200 Scale geological prints.

<u>Level</u>	<u>South</u>	<u>Central</u>	<u>North</u>	<u>712</u>	<u>Piute</u>
300				3	
400				2	
500	1			5	1
600				3	
600 Sub.					1
700					
800					3
900	1	1	2		1
1000	3	6	2	3	1
Totals:	5	7	4	16	7

Total: 39 holes with average 300 foot depth = 11,700 ft.

If drilling be substituted for crosscutting along the extension of 1017DN and 904-B DN, then an approximate 300 feet of crosscuts should be drilled for every 100 feet of lateral drifting so long as mineralization is not located. This alone would be almost a full-time job for a drill. The same substitution could be made in conjunction with any drifting done along the 1100 or 1200 levels.

Mr. Bayer - 2

Dec. 14, 1938

In replacing the expensive crosscut headings from 1017 DN, 904-B DN, or along the 1100 foot level, it may be said that diamond drilling would be saving, foot for foot, the difference between the cost of drilling and the cost of drifting. Two men on a drill will average around 20 feet per shift at a cost of \$1.30 (estimated) and replace 20 feet of crosscutting at \$15.00 per foot, which is \$272.00 per day. Of course this would hold true only when expected or possible mineralization is prospected for; and if any vein is located, the drift could be driven along it and then it would be unnecessary to drill so many holes.

It may therefore be said that to supplement our exploration with diamond drilling would not only eliminate drifting but we would have more specific information as to where our headings should go.

Yours very truly,

(s) S. K. Droubay.

## MINING DEPARTMENT

## INTERNATIONAL SMELTING AND REFINING COMPANY

818 KEARNS BUILDING

SALT LAKE CITY, UTAH

SUBJECT:

December 10, 1938

Mr. G. E. Weed, General Manager of Mines,  
 Anaconda Copper Mining Company,  
 25 Broadway,  
 New York City.

Dear Sir:

I have read my copy of Mr. Sales' letter to you concerning future development at the Walker Mine.

The following development data will prove of interest.

	<u>Money</u>	<u>Lin. Feet</u>
1937	\$143,863.43	7,550
1936	<u>87,188.83</u>	<u>5,558</u>
Increase 1937	\$ 56,674.60	1,992
	or	or
	65%	35.8%

You will note the increase in development work during (first 10 months) year 1937 as compared with year 1936.

In discussing the development program in the order listed by Mr. Sales:

LOWER LEVEL DEVELOPMENT WORK:

1. The 1100 foot level is under water at present, and will have to be pumped out.

Preparations are now under way to begin pumping, and should start about December 15th.

Prior to the last shutdown we were cutting skip chutes preparatory to starting the lower level. These will have to be completed, and when finished drifting will be immediately started, and pushed rapidly.

Dec. 10, 1938

Lower level development work could also be supplemented with diamond drilling from 1017 DN, which could be contracted.

900 LEVEL PIUTE OREBODY:

2. This level is also under water at present.

Owing to the slow arrival of an electric cable for the shaft, pumping has been delayed. However, equipment is now being installed and pumping should commence about the middle of the month. When the level is free of water drifting will be started immediately north and south of the shaft, and pushed with all possible speed.

In the meantime, we have been drifting north on the 800 Piute. This work has been stopped on account of inability to handle both ore and waste. However, any further work on this level will only be a duplication of the work below.

1017 DRIFT NORTH:

3. This drift will be started as soon as the water is pumped below the skip chutes in 706 shaft, so they can be used, which will be the latter part of this month.

Instead of crosscutting at intervals, east and west from 1017 North to prospect the walls, this work could be done much cheaper by diamond drilling.

800 PIUTE NORTH:

4. The 800 DN on the Piute, as previously mentioned, has been stopped.

Stope preparations are under way above the level, and mining has been started.

800 DRIFT SOUTH-PIUTE:

This was the first drift started after the development work was approved last August. The ore, so far developed, has been of good grade, and the ore reserves materially increased.

607 Drift South (I think Mr. Sales means 619 DS):

5. This drift has already been started, and will be kept going until the footwall branch has been thoroughly prospected.

Mr. Weed - 3

Dec. 10, 1938.

For short range development work diamond drilling with a small machine would be much cheaper than driving crosscuts, as it will save handling waste, eliminate hoisting, etc.

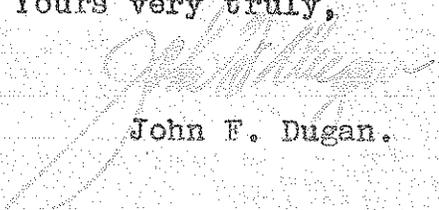
The work could be contracted for about \$1.50 to \$1.75 per foot, depending on the footage, or we could buy our own machine and do the work ourselves.

Either way, the work will pay for itself within a few months.

Both Bayer and Droubay are very anxious to get a short range diamond drill development program under way, and are now preparing the setup for me.

I would recommend the diamond drilling as it will be much cheaper than crosscutting, and will eliminate much unnecessary work.

Yours very truly,

  
John F. Dugan.

JFD:H  
CC: JOE  
TL ✓

AIR MAIL

December 8, 1938

Mr. Reno H. Sales  
Room 1726  
25 Broadway  
New York City, N. Y.

Subject:

WALKER MINE

Dear Reno:

I am in receipt of a letter dated December 5 from Droubay at the Walker mine, a copy of which has been sent to both you and Mr. Dugan. Mr. Dugan is home sick with a severe cold and I haven't had a chance to discuss the situation with him.

In the first part of Mr. Droubay's letter he calls our attention to a number of facts of which we have been aware for a long time, and as you and I both know the chances of prolonging the life of the Walker mine lie in two places - first, at depth below the Central and North ore bodies, and second, the possible continuation of the vein zone north of the Piute.

Development below the 700 level in the Central and North ore bodies has always been the most difficult for this department to keep going as the operators always had some very good reason why this downward development should not be done. During the last period of operation both Mr. Elton and I used every effort to get the winze down below the 1000 level and finally succeeded in getting it deep enough so that development work could be done both to the north and south. The downward projection of the south end of the stopes on the 1000 level is approximately 600 feet south of the shaft and continues for a distance of from 600 to 700 feet.

Regarding the diamond drilling program, the drilling necessary to establish the ore bodies below the 1000 level will involve considerable time

2- Mr. Reno H. Sales

December 8, 1938

in addition to the expense. I believe that the time element is probably the most important in the operations at the Walker mine and that in order to keep the tonnage up to capacity, it will be necessary to develop ore very rapidly from now on. I am afraid that if drilling is done before the 1200 level is driven that a great deal of time will be lost. It appears to me that the ore body exposed on the 1000 should reach the 1200 level, although this is not an established fact. However, the 1200 drift can be driven to the north and reach the ore body probably in 600 feet. If the ore body exists on the 1200 and is drifted on, the material coming from the development work should be good enough for ore which would eliminate the necessity of handling waste from this level. As I see it, the first 600 feet will probably be the most costly and difficult to drive. This work should be started at once and pushed as rapidly as possible. The work to the north of the Piate should also be pushed as rapidly as possible. If drilling is contemplated, I believe that the 1200 level would be the level from which drilling to greater depth should be done.

Kildale and I have gone over the situation and we both feel that the 1200 level should be driven before any drilling campaign is started.

Regarding the extension of the 712 ore body to the 1000 level, I have always been very dubious about the existence of this ore body on the 1000 level; that is, I do not anticipate any ore of great importance at this location, and I believe that if necessary we should suspend operations on the 1000 level looking for this ore body and drive the 1200 level instead.

TL:P  
cc: Mr. Dugan  
Mr. Bayer

Very truly yours,

**WALKER MINING COMPANY****WALKERMINE****PLUMAS COUNTY, CALIFORNIA**

December 5, 1938

**L. F. BAYER, MANAGER**

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

Dear Tom:

The question of future ore for the Walker Mine has been discussed a good many times by all who are directly or indirectly concerned with the company. Now that the Piute Orebody above the 700 haulage level is nearly exhausted of available ore it is important, especially from an operating viewpoint, that serious consideration be given to this problem.

Although we list over 4,000,000 tons gross ore in our reserve statement as of November 1, 1937, and over 1,000,000 tons available ore in the monthly statement of June 1, 1938, it is questionable how much of this can be produced fast enough to keep the mill up to a desirable capacity.

Mr. Bayer and myself have talked the situation over a good many times and have checked the physical properties of each ore block separately. Being more or less directly responsible here on the property, we have tried to get an estimate of how far ahead the mill can be kept running at a satisfactory tonnage. Unless we have a generous downward extension of the 712 Orebody and a decided rake south to our Piute Orebody with depth, it means that we can measure the life of the mine. It will also mean that daily production tonnages will gradually become more difficult to obtain.

In the past there were the numerous large stopes of the Central and North Orebodies from which tonnages could be kept up, and the richer ore from the South and 712 Orebodies to hold up the grade. As these were depleted above the 700 level, the choice spots below were mined out and, up until about 1931, mill heads could be kept above 1.5% copper. About this time there was a decided drop in the grade of production. However, cheap mining costs in the large stopes, especially in the upper levels of Piute, which came in later, made it possible to keep running at a profit. Piute produced at about 1% copper, and with a better grade ore distributed throughout the rest of the mine, an approximate 1.25% copper head was kept during the year 1937.

We are now, for the first time, faced with the problem of supplying the majority of our production from below the 700 haulage level. The lower levels of Piute contain large tonnages of ore, but the vein is so flat that a slower method of mining must be used. Hoisting facilities are such that it is questionable whether we can, with production from these lower levels, replace the 600 to 800 tons per day that formerly came from above.

The Main Orebody becomes more narrow with depth, and the majority of the vein below the 800 level is messed up with the No. 1 hanging wall fault. With the exception of a few stopes that are being operated now, most of the more desirable blocks of ground have been produced.

This means that in the very near future all of our production will come from stopes that are not only lower in grade, but must be mined under more adverse conditions than was done in the past. Even by supplementing this with as much pillar robbing as possible, it will be expensive to maintain a desirable production figure. We are feeling the effects of this even now.

The only way to remedy the condition that is rapidly approaching is to be assured of enough ore below the 700 level to warrant spending money on adequate haulage and hoisting facilities. If this is not proven in the next few months with large tonnages under 712 Orebody and in the lower south end of the Piute Orebody, the next best chance will be to find it north of Piute, or below the 1000 level in the Main Orebody. If these prove unsuccessful we may be forced to lay out a plan whereby we take all that we can get from the mine and get out.

In talking over the question of exploration work below the 1000 foot level with Mr. Bayer we feel that, from a money viewpoint, as well as gathering advance information, a long hole diamond drill program, substituted for the near-future resumption of operations in sinking 1080A Winze and exploring along the 1200 foot level, would be much to the advantage of the company. To my knowledge this drilling can be contracted with holes up to 1200 feet in length at a total cost to us of less than \$1.80 per foot, on a basis of a 5,000 foot minimum contract.

By spending about \$17,000 on this drill program we could, within a few months' time, find out whether the vein exists on our 1200 and approximately 1600 foot levels. To gain this information by additional sinking of 1082A Winze and extending laterals north 1300 feet and south 300 feet along the 1200 and 1600 foot levels, and doing the necessary crosscutting, would cost us in the neighborhood of \$190,000. The \$17,000 would be worthwhile insurance on the larger amount.

In checking over the records of past diamond drilling carried out on properties of the Walker Mining Company, it is seen that this work has played an important part in the finding of ore, and has saved a great deal of expense by eliminating exploratory work that otherwise would have been done. In no case did a drill hole penetrate a later developed orebody without giving indications that the orebody existed. No holes have given inaccurate results.

The early surface holes Nos. 1 to 5 drilled through the upper part of the North Orebody and proved the extension of a known vein. Early tunnel holes Nos. 1 and 3 crosscut veins on which later work developed 750A stope and the stopes in the south end of the South Orebody. Surface hole C, drilled in 1926, located 17 feet of 4.12% copper ore, which resulted in the development of our 712 Orebody. Surface hole H cut the lower north end of the same orebody,

showing mineralized quartz up to 1.5% copper (estimated). In 1928 underground holes Nos. 15 and 16 drilled from the 712 orebody were responsible for developing the 705A hanging wall streak and the 517 footwall vein.

It may be said that out of the 34 holes drilled, totaling 17,223 feet, eleven gave positive results wherein actual veins were located. In addition to this there were many slightly mineralized zones located that will help guide future development, and much negative information that has saved many feet of drifting. The records of this drilling serve as a permanent and valuable guide for the company.

In considering the two solutions to the question of future ore for Walkermine the following basic cost estimates were compiled and may be used in estimating costs of exploration along or below the 1000 foot level.

Sinking 1082A Winze	\$100.00 per ft. (minimum)
Large-size x-cuts and laterals 7x9	20.00 " " "
Small x-cuts 5x7	15.00 " " "
Diamond drilling first 500 feet	1.50 " " "
" " 500 to 600 feet	1.60 " " "
" " 600 to 700 feet	1.70 " " "
" " 700 to 800 feet	1.80 " " "
" " 800 to 900 feet	1.90 " " "
" " 900 to 1000 feet	2.00 " " "
Diamond drilling, air, water and misc.	0.20 " " "
Head room for drilling	150.00 per station

As crosscutting into the hanging wall is rather expensive, the cheapest way of proving up our vein below the 1000 level in our Main Orebody, would be to drill 6000 feet of drill holes from two common stations, involving 450 feet of 5x7 crosscutting. There would be a 300 foot crosscut out from the middle of our North Orebody, with two very steep 1000 foot holes and two flatter 500 foot holes fanned. The other four holes would be the same, drilled from a 150 foot extension of 1101 XCE. This is indicated as Set-up C on the maps, and is shown with green crayon. The exact strike and dip of such holes would have to be determined by additional sections. Such a drilling program would cost:

400 ft. crosscuts at \$15 per foot	\$6750
4000 ft. hole under 501 feet at \$1.50 ft.	6000
2000 ft. hole over 500 feet	3600
6000 ft. hole at 20¢ per ft. for air and misc.	1200
2 stations	300
	<u>\$17850</u>

Of course, more satisfactory positions for collaring holes could be obtained by additional crosscutting, as indicated on the maps. The long, steep holes could be substituted for more numerous short holes, or vice versa.

December 5, 1938

To drift along our 1200 level and obtain comparable information will cost:

Lateral north 1300 ft. at \$20	\$26000
Lateral south 300 ft. at \$20	6000
Crosscuts north and south 900 ft. at \$20	18000
Skip pockets on 1200 level	5000
	<u>\$55000</u>

The same figure may be used for exploration on our 1600 foot level if 500 feet of shaft sinking at \$100 per foot is added.

To explore 1200 foot level	\$55000
To explore 1600 foot level	55000
Sinking 1082A Winze	50000
	<u>\$160000</u>

The figures for drifting look rather high, but when waste disposal, pumping, and the congested condition of our hoisting facilities are taken into consideration they are not far off.

I trust that I have not been too presumptive in calling attention to a problem that should be solved.

Respectfully yours,

*S. K. Droubay*  
S. K. Droubay

cc-Mr. Sales  
cc-Mr. Dugan  
cc-Mr. Bayer

Salt Lake City, Utah

November 18, 1938

Mr. C. E. Weed  
Room 1726  
25 Broadway  
New York City, N. Y.

Dear Sir:

I have discussed the Walker mine development situation with Lyon and Kildale. The following program is recommended with individual projects listed in order of their importance.

- 1- Explore the Walker vein zone northerly on the 1100 foot level. It is proposed that this work will be followed later by diamond drilling to test the vein at deeper levels.
- 2- From the Piute shaft extend the 900 level northerly into unexplored territory beneath the basalt covering. This project may mean upwards of a thousand feet of work, depending upon geological disclosures.
- 3- Continue 1017 drift northerly, supplemented by crosscutting to prospect the downward continuation of the 718 ore body.
- 4- Continue the 800 Piute drifts northerly and southerly as at present. Should the Piute vein be terminated by a fault in the face of the north drift, further consideration should be given before prospecting is undertaken to recover the faulted segment. The distance the 800 south drift is to be extended will naturally depend upon the behavior of the vein as to strength and mineral character.
- 5- Continue 607 drift southerly to prospect the footwall branch.

In my opinion it is extremely important that the suggested 1100 and 900 developments be pushed. What is most needed at the Walker is a demonstration of the downward continuation of the Walker vein ore, or the development of additional ore on the Piute vein to the north in unexplored territory. Unless one of these projects is successful, the Walker mine is going to be in a bad way in the not distant future. It is therefore of extreme importance that the 900 and 1100 projects be gotten under way at the earliest possible date and

2- Mr. G. E. Weed

November 19, 1958

continued to completion.

I will discuss these matters further with you upon my arrival in  
New York.

Yours very truly,

RHS:P

cc: Mr. Kelley  
Mr. Elton  
Mr. Lyon  
Mr. Dugan

Reno. H. Sales

ANACONDA COPPER MINING CO.

C O P Y

Aug. 17, 1938.

Mr. C. E. Weed,  
Manager of Mines,  
Building.

Dear Sir:

The development recommendations for the Walker Mine decided upon yesterday in the conference at which you, Mr. Gidel and myself were present, are listed below in order of preference:

- (1) Eighth Level - Continue 818A Drift northerly on Piute Vein
- (2) Eighth Level - Continue 886 Drift south on Piute Vein.
- (3) Sixth Level - Continue 619 Drift southwest.
- (4) Third Level - Continue 363B Drift northwesterly on Main Vein.  
This recommendation is subject to a further study of details and to conditions in 460 stope.
- (5) Seventh Level- Drift northerly on vein disclosed in 743 Crosscut.
- (6) Tenth Level - Continue 1017 Lateral 200 feet northwesterly on present course, then crosscut north 70° east through projection of 712 orebody.

Of the other recommendation in Gidel's memorandum of July 22nd, we eliminated the proposal to crosscut north 60° east from 712 Drift at a point 380 feet southeast of 706A Winze.

As to the remaining recommendations covered by Mr. Gidel's memorandum, these are to be carried out in order of convenience to the mine operation.

It is further suggested that at such time as the Ninth Level of the Piute is unwatered, Drift 904B North be extended in preference to the

ANACONDA COPPER MINING CO.

Mr. C. E. Weed

COPY

Aug. 17, 1938.

proposed footwall crosscut, as given in Gidel's memorandum.

Yours very truly,

RENO H. SALES

RHS:KM

cc:Mr. T. Lyon ✓

# ANACONDA COPPER MINING COMPANY

RENO H. SALES, CHIEF GEOLOGIST  
M. H. GIDEL, ASSISTANT CHIEF GEOLOGIST



BUTTE, MONTANA

GEOLOGICAL DEPARTMENT

Aug. 10, 1938.

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

Dear Tom:

Mr. Gidel has handed me a memorandum dated July 22nd, covering certain recommendations for development in the Walker Mine.

I have gone over this list carefully and wish to make the following suggestions as to this program. I will take up the recommendations in order:

## THIRD LEVEL.

I doubt the advisability of extending Drift 363-B northerly. It should not be done in any case without a thorough review of the information we now have on the 460 stope operation and on 363-B Drift itself. Unless 460 stope caved, I see no reason why it should not have continued up to above the Third Level. We should be reasonably sure that the 300 is not at or near the oxidized zone, in which case there might be little or no tonnage above that level. If a careful study of the record seems to justify the work, I will certainly approve it.

## SIXTH LEVEL.

The continuation of 619 Drift southwesterly on the vein disclosed in 517-B Drift, is probably good prospecting. I have mapped 517-B Drift carefully and I seriously doubt whether the extension of 619 Drift will block out any ore. I got a very poor impression of that vein on the 500,

Mr. Tom Lyon--2

Aug. 10, 1938.

but there is a chance that the 600 will be better, and, if it does show up favorably, the workings should be continued out into new country as long as there is something worth while to follow.

In any case, should the 619 find ore, a raise will be necessary to the 500 before a stope can be started.

SEVENTH LEVEL.

As to that first recommendation, I do not see why it would not be better to drift northerly on the ore streak shown in the east crosscut. If the vein is worth anything, the ore recovered might help to pay the expense of development. From my knowledge of the geology, I do not have much hope that this piece of work will find enough ore for a stope.

I cannot approve the second recommendation, because a drill hole was run crosscutting this same ground at a point less than 150 feet north of the proposed crosscut location. It found no ore. Furthermore, 6 sub-level drift followed the ore from the south until it became too low grade to justify further drifting.

I cannot see much chance for success in the next recommendation, which is a crosscut easterly from 712, 400 feet north of 706-A Winze, but the reported ore showing in Drill Hole No. 8 may be better than I think it is.

I agree that 765-A Drift southeasterly on the east branch of the Piute Vein is good prospecting. A crosscut drill hole farther to the south did not show up anything worth while, but I think we should have a working out into that hangingwall country somewhere in the 765-A Drift, which will enable us to really learn what happens to the Piute zone going south.

I have little or no hope that your last recommendation for the Seventh Level will find anything worth drifting on, but it will settle for

Mr. Tom Lyon---3

Aug. 10, 1938.

all time whether or not there is a continuing branch northerly under the Piute workings.

EIGHTH LEVEL.

I agree that 818-A Drift should be continued northerly on the Piute Vein until the supposed fault is reached, and that if a cut-off is found the working should be extended through the fault. Because of the nearness of the oxidized zone, I cannot subscribe to a further search for the faulted end of the Piute Vein, if there be one, at the elevation of the 800. This exploratory work should be left for the 900, at which level, should the vein be found to extend northerly, we would be able to develop some tonnage, assuming the oxidized zone does not go lower than we anticipate. I feel that whatever we may do on the 800 north of the fault, we will have to duplicate anyhow at the 900.

TENTH LEVEL.

We are naturally forced to continue 1017 Lateral northerly with crosscuts at intervals, as suggested in your first recommendation for this level. I must say that the Tenth Level country thus far opened up in this 712 area has been extremely disappointing.

Your recommendation No. 2 for the Tenth Level is probably all right, but I do not see why a crosscut should be for more than 100 feet as a maximum.

In addition to the above recommendations, I would like to suggest another, which perhaps comes more nearly under the head of general development. I think we should plan to either drill into the footwall

Mr. Tom Lyon---4

Aug. 10, 1938.

country under the above-mentioned 517-A and 619 drifts at the Tenth Level, or preferably extend 1055-B crosscut. This with the hopes that the southwest striking zone may have strength and that it might develop more favorably at greater depths. No doubt, the extension of 1017 Lateral plus the crosscuts therefrom, will keep the 1000 busy, but in such a case we should plan to do the drilling just suggested at any time we happen to have a diamond drill crew on the ground.

Yours very truly,

RHS:KM  
cc: Messrs. Weed  
Gidel  
Dugan

*Paul H. Sells*

MEMORANDUM

The following recommendations are for the proposed short-range development program at the Walker mine. They are listed according to levels.

It is proposed that the recommendations concerning development of the Flute vein on the 8th level be given the preference.

THIRD LEVEL

Continue 363 B Drift northwesterly on the Main vein (North Ore Body) and crosscut to footwall and hangingwall of structure as required.

Object - To prospect the possible northerly extension of the North Ore Body above 460 stope.

Approximate Work -

400' or more of drift  
150' or more of crosscuts

SIXTH LEVEL

Continue 619 Drift southwest on projection of ore-bearing vein exposed in 517 B drift southwest.

Object - To develop the downward projection of 517 ore body. There is approximately 200 feet length of vein in 517 B drift which averages about two per cent copper.

Approximate Work

250' of drift or more.

SEVENTH LEVEL

Extend 732 crosscut due east a distance of 60 feet beyond present face at 10 feet east of 705 drift south. Drift both ways on any ore thus exposed.

Object - To cut northerly projection of vein (course N 7° E) exposed in 743 crosscut east (150' S. of 732 crosscut).

Vein in 743 crosscut is three feet wide containing bands of sulphide with some chalcopyrite. Car Sample 1.21 per cent copper.

Approximate Work

Total new crosscut 60'

SEVENTH LEVEL

2 Drive crosscut N 60° E from offset in 712 drift northwest at point 380 feet southeast of 706 A. Winze.

Object - To cut one or more probable veins lying on the hangingwall of the Main vein opposite the Central ore body. These probable structures are indicated in 709 D. drift and in D. D. Hole No. 8.

First vein cut in D. D. Hole No. 8 contained two feet of quartz assaying two per cent copper.

Approximate Work

Total new crosscut 150' or more.

3 Drive crosscut N 60° E from 712 Haulage drift starting at a point 400 feet northwest of 706 A. Winze. Drift on any ore thus found.

Object - To explore probable hangingwall splits of vein shown in 712 drift, and in D. D. Hole No. 8, lying in block of ground between northeast faults.

Approximate Work

150' or more crosscut plus drifting.

4 Continue 765 A. drift southeast on the east split of the Piute vein.

Object - To further prospect this vein.

Approximate work

100' or more.

Drive crosscut S 75° W from 712 D. N. starting at a point 230 feet northwest of 728 A crosscut.

5 Object - To prospect for possible extension of 712 vein structure northwesterly beyond a north-south fault.

Approximate Work

100 to 150' of crosscut.

EIGHTH LEVEL

Continue 818 A drift northerly on Piute vein and crosscut as required to determine footwall and hangingwall of structure. Upon exposing the northeast fault which terminates the north end of the Piute ore shoot on 700, plan further work from the proposed 800 drift to recover the faulted vein.

Object - To complete the development of the Piute ore body to the northeast fault, and to generally prospect for its further extension to the north or northeast beneath the basalt caprock. This development will enable us to locate better sites for future diamond drill prospecting in this area.

Approximate Work 140' to cover ore projection beneath 700 level  
600' or more additional general development.

Continue 886 drift south on Piute vein.

Object - To develop projection of southerly portion of Piute ore shoot beneath ore exposed in 765 A drift. It may ultimately be desirable to continue this drift to the projection of 712 ore body.

Approximate Work - to south end of Piute ore body - 300'  
additional work to 712 ore zone 1200'

NINTH LEVEL

Continue 972 B crosscut an additional 200 feet due west beneath Piute Incline shaft. This crosscut is now in 65 feet.

Object - To prospect for possible footwall branches of the Piute vein. Small vein structures have been noted in the Piute shaft lying west of the main ore shoot.

Approximate Work - 200'

TENTH LEVEL

Continue 1017 lateral for 200 feet northwesterly on same course, then turn crosscut therefrom N 70° E for 100 to 150 feet through projection of 712 ore body.

Object - To develop downward projection of 712 ore body beneath 719 B drift.

Approximate Work

200' lateral  
100' - 150' crosscut.

Drive crosscut S 75° W from 1017 Drift northwest starting same at a point 220 feet south of 1008 B crosscut northeast.

Object - To prospect for possible northerly projection of North Ore body beyond a north-south fault zone.

Approximate Work

200' of crosscut.

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

April 13, 1938

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

Dear Tom:

The enclosed maps present a picture of Walker Mine activities since November 1, 1937 and show the status of the Piute Orebody to date.

Mr. Dugan sent in a long section to be brought up to date, but since then, two more holes have worked through to the surface. He has also written for additional information in regard to Ore Reserves in the extreme North end of the Orebody, apparently for discussion with Mr. Weed. So, to avoid any confusion, I am mailing him his desired information and sending these maps on to you with hopes that they will be handy for future discussion. I will refer Mr. Dugan to you.

The North end stope set-up was worked out under the guidance of Mr. Bayer, and is intended to replace the production that will eventually be lost from the South end. I was hoping that the caving would hold off until after the high water period, but now it looks as though water will be a problem, especially if the snow melts very rapidly. The 645 cave is directly under the creek bed but the flow may be diverted around the side of the hill. I imagine it will be about two weeks before water starts running in the creek.

We are having fair weather, and it should not be many weeks before the roads are open.

Respectfully yours,

Lith K Droubay

SKD  
W

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## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

November 11, 1937

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

Dear Tom:

Please find enclosed the Geological Sketches, and Progress Sheet for development during the month of October, recommendations No. 7 to No. 13, and the November 1st Tabulation of our Available Ore Reserve.

We have the annual Ore Reserves, about one-half completed, and I expect to have them finished and all my work up to date by the 16th. Broadwater was transferred to the Operating Department, but is back giving me a hand with the Reserves.

I understand that the curtailed production program went through, and will go into effect on the 16th and that all those working here, after that date will suffer a large salary cut.

Respectfully yours,

Seth K Droubay

SKD  
W

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

October 16, 1937

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

Dear Tom:

Please find enclosed the sketches and summary sheet for Development Progress during the month of September, the October 1st tabulation of our Available Ore Reserve; also six sheets of Recommendations for Development Work on the new forms that Mr. Kildale had made up.

There is nothing much new in development. We have not yet encountered the extension of 712 Orebody, but the next crosscut into the hanging wall should pick it up. We were anxious to locate some sort of a lead with 1056 XCE showing enough encouragement to justify drifting along but as yet there is nothing in sight. We are almost 100 feet beyond where the sketch shows, however, the mineralization could very easily be farther out. We will continue extending 1056 XCE and if nothing shows up, we will crosscut again about 100 feet north of the present 1017 face.

The North end of the 800 and 900 levels of Piute are about to the end of ore. They have dropped back about 100 feet from the face of 887 DN and are widening the drift toward the footwall in order to make room for the large chute and slusher platform necessary to mine these flat veins. There may be better ore along the footwall than we have in the present face, however, from indications the 700 and 900 levels, I do not expect to see the ore extend much farther

north. The South end of the 800 level looks good and I hope to see ore come in on the 900 level below it. 815A Raise and 814 XCW assays show that this zone should produce at 1.45% Cu with a mining width of 40 feet.

We have picked up the 517 mineralization on the 400 level with 472C XCW, and should drift on 2.00% plus Cu ore for the next 200 feet to the top of 559B Raise. We have not found much on the 600 level directly below with 619E XCW but should begin getting into ore there soon.

When Mr. Dugan and Mr. Kildale were here last week we checked over the Development Classification sheet that I spoke about in my last letter, and I am enclosing a copy with the September development tabulated. This is more detailed than the regular sheet enclosed, but I am not so well satisfied with the way the Gross Ore is listed. It is rather hard to show how much Gross Ore is developed by each separate heading, especially in a place such as Piute where the vein is so thick that it takes drifts, crosscuts, and raises to determine the full width of the ore. On this sheet the development is grouped according to the block it is charged to, and newly developed ore credited to headings as a group rather than singly if more than one was used in blocking out the ore. Mr. Dugan asked that a copy be sent in so you and he could discuss it. I am not sure whether the last column is what he asked for or not. It represents the total Gross Ore developed to date in the block by the particular heading or group of headings. The ore could be proportioned to each one separately and listed in parts if it would provide a better picture.

I have written Mr. McNamara about looking at his property near Reno and expect to go over next week.

Best personal regards,

Seth H. Droubay.

much more information than the type we are using at present and will act as a record that will be helpful in figuring our annual Ore Reserve. Mr. Dugan mentioned that he would like additional information, so I will check it over with him and with Mr. Kildale on their next visit to Walkermine.

Very truly yours,

Seth K. Droubay.

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

September 10, 1937

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

Dear Tom:

Please find enclosed the sketches and summary sheet for Development Progress during the month of August; also the September 1st Tabulation of our Available Ore Reserve.

Development Progress shows 770 feet in Ore averaging 1.55% Cu. and 748 feet in waste. These are favorable figures, showing an increase over those of July, but the Available Ore developed is much less. A larger portion of the work was done in developing blocks that was already listed as Ore Available for stoping.

1017 DN is very close to the extension of the 712 Orebody and we should cut the vein with the heading or with crosscuts in the very near future. The mineralization showing near the face of 1043B XCE appears to be tail end of the orebody and by projecting it along the general strike of the ore above, it lines up very closely with where sections show the vein should be. The Piute lower levels look about the same. The formation in 887 DN has changed from the dark massive quartz, to the grey, boney structure that occurs as bands in the formation above the 700 level. It is the first occurrence of it in the lower levels. We are drifting along the hanging wall vein of the South Orebody with 833 DN.

We are trying to build a more detailed sheet for Development Progress; one that will classify each heading and show how much ore is developed by it. It will give

WALKER MINING COMPANY  
DEVELOPMENT PROGRESS

April 1st to May 1st- 1937

Recommendation Number		Ore Feet	% Cu.	Waste Feet
7	1101 X cut east extended 35'			35
8	1013 B X cut E extended 6' 1014 B X cut E extended 5'			11
10	1017 D N extended 134' 1008 X cut E extended 21'			155
12	761 D N extended 71'	71	1.03	
	799 D raise driven 7'	7	1.80	
15	942 X cuts (drifts north and south) extended 18'	18	1.47	
	943 X cut W extended 10'			10
	944 B X cut W extended 55'	40	1.41	15
	948 B D N driven 24'			24
17	308 D N extended 74'	74	1.30	
	308 X cut driven 36'			36
	310 X cut E extended 11'			11
18	451 D N extended 40'	5	1.52	35
	451 X cut E driven 25'			25
19	558 B raise extended 20'	20	2.25	
	559 B raise started 15'	15	3.10	
21	Sideswiping in ore on 800 level			
TOTALS		250	1.45%	357

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October 11, 1937

Mr. W. T. Benson, Chief Engineer  
Walker Mining Company  
Walkermine, California

*Walkermine*

Dear Benson:

I wish to acknowledge receipt of your letter of October 6 enclosing therein maps showing the location of advance in all types of headings and stopes at the Walker Mine during the month of September, 1937.

Very truly yours,

TL:P

Tom Lyon

## INTERNATIONAL SMELTING AND REFINING CO.



GEOLOGICAL DEPARTMENT  
KEARNS BUILDING

TOM LYON

SALT LAKE CITY, UTAH

August 24, 1937

Mr. Tom Lyon

Offices

Subject:

WALKER MINE*Development*

Dear Sir:

As per your instructions I visited the Walker mine during the first week of August. The following report summarizes the present conditions as regards development work and maintenance of ore reserves at this mine.

Development work at the Walker mine, which had been lagging behind the necessary amount of work for some time, has picked up during the last two months and for the months of June and July amounted to 1100 feet and 1348 feet per month respectively. As a result the month of July was the first month to show an increase in the available ore reserves between the first and last of the month. This was due to the pushing of development work on the 800 and 900 levels in the Piute ore body and to the completion of the 761 drift in the footwall vein of the north ore body. The above development program led to an increase in the available ore reserves of the Piute ore body and led to the addition of a large tonnage of ore (100,000 tons) in the footwall vein at the south end of the north ore body, west of blocks 820 and 920. The presence of a wide low-grade (1% copper, 0.05 oz. gold, 0.75 oz. silver) vein in this area has been proven and doubtless some large stopes with low mining costs, such as 720 stope, can be opened up here. These will serve to help replace the similar large low-grade stopes in the Piute ore body which have been providing a large part of the recent production from the mine but which will be largely exhausted within the next few months. The larger portion of the ore produced from the mine during the last two months has come from the

2- Mr. Tom Lyon

August 24, 1937

Piute ore body above the 700 level and from the North ore body below the 700 level. New stopes are being opened up in the latter area (920, 930 and 1040 stopes) to replace those being mined but, as mentioned above, in the Piute area above the 700 the reserves are being rather rapidly depleted. The total reserves of available ore as of August first amount to about 1,327,000 tons, according to Mr. Droubay's report, of which about 550,000 tons are located above the 700 level and 750,000 tons are below the main tunnel. At present time about one-third of the tonnage produced, or about 450 tons per day, are being hoisted from the lower levels. As the reserves of readily accessible ore above the 700 are depleted an increasingly large percentage of the production is going to have to be hoisted. This will require enlarged and improved hoisting facilities as the present capacity for hoisting ore to the 700 level is only about 750 tons per day.

The most important development projects now being carried on are the 1017 drift north, the 1082 winze below the 1100 level, and both the 800 and 900 level drifts in the Piute ore body. The 1017 drift north has just reached the downward projection of the 712 ore body, assuming a southerly rake to the south edge of the ore body. If the rake below the 700 is directly down the direction of dip however, the south end of the ore will still lie about 350 feet ahead of the face. The 1017 drift is now being driven on line and about 150 feet west of the projection of the hanging wall vein of the 712 ore body on the 700 level. No crosscutting to either the hanging wall or footwall faults has been done for a distance of 900 feet along the drift. 1043 crosscut still lacks about 75 feet of reaching the hanging wall fault and should be completed. The country rock of 1017 drift north of the north ore body has consisted of massive finely-crystalline hornfels with many spots of epidote and is similar to some of the rock found on the footwall of the ore bodies on the 700 level. 1045 crosscut east has passed out of the massive epidote hornfels however about 75 feet east of the hanging wall

3- Mr. Tom Lyon

August 24, 1937

fault and in the face shows more schistose country rock with some scattered chalcopyrite. Thus it appears that the mineralization in this area may have followed the east fault zone to the east of the massive hornfels and further prospecting to the main hanging wall fault zone is most advisable. Diamond drill prospecting along the 1017 drift would give much quick and valuable information in this area between the north and 712 ore bodies and possibly save much expensive crosscutting here.

1088 winze shaft had reached a depth on August 5th of 106 feet below the 1100 level. It is planned to continue sinking to the 1200 level where sump and station will be cut. If the north and central ore bodies are found to extend down to this level this will be the next main haulage and operating level. However it is believed that before extensive exploration is carried on here it would be strongly advisable to develop the ore zone on the 1100 level. It now appears probable that the Piute ore body may have decreased in size and strength quite abruptly between the 800 and 900 levels and should the central and north ore bodies show similar changes below the 1000 level (which it is not predicted that they will do but which is quite possible) exploration and development work in the 1100 level, prior to exploration on the 1200 would be most advisable and might save considerable expense in carrying on the work at the lower elevations.

On the 1100 level the vein under the fault as exposed on the station shows a width of 25 feet averaging 0.98 per cent ore. The crosscut into the hanging wall was stopped at a distance of 70 feet beyond the fault but still shows some mineralization in the face. This crosscut should be driven further to determine if any of the lode still exists further in the hanging wall of the steep fault just east of the shaft.

On the lower levels in the Piute ore body the drifts north and south have opened up ore for a distance of over 600 feet. 886 drift south after passing through a low-grade area shows good ore again in the face. 887 drift north

4- Mr. Tom Lyon

August 24, 1937

continues in ore, the last 30 feet showing an average assay of 2 per cent copper. 801A crosscut has proven a width of over 30 feet of ore in the block north of the Piute shaft and has enlarged the ore reserves in block 815 from 29,000 tons of 2 per cent copper ore to 40,000 tons of 1.4 per cent copper ore. On the 900 level, 904 drift north has shown only low-grade mineralization for 180 feet north of the shaft, but shows much stronger mineralization in the face and is now in good ore. On neither the 800 nor 900 drifts north is there as yet any indication of the ore cutting off against a footwall fault which swings northeasterly, as happens at the north end of the 700 level. 903B drift south continues in low-grade mineralization, 965 raise showing 15 feet of one per cent ore. Thus the general aspect of this development indicates the possibility that the Piute ore shoot may rake to the north, and if the north drifts on the 800 and 900 levels continue to develop ore the short north drift on the 1000 level should be extended northerly beyond the present 800 and 900 levels.

In addition to the work now being carried on as above mentioned there are several other areas which offer opportunities for the development of important blocks of ore and where development work should be carried on as soon as feasible. These include the 517 ore body in the footwall of the 712 ore body; the 710 ore body (at the south end of 712) above the 500 level or between 605D stope and the surface; and the south end of the south ore body between the 700 and 1000 levels, including both the footwall and hanging wall veins. All of these areas offer opportunities for the development of important tonnages of new ore. Detailed recommendations for all this work will be made out in the near future.

The geological work at the Walker mine is being well handled under the direction of Mr. Droubay, who is working in close corporation with, and giving much valuable advice to the operating department. The development headings are mapped nearly every day and the valuable stope sections are posted up as soon as the

5- Mr. Tom Lyon

August 24, 1937

engineering measurements are available. Closer underground direction of the development headings by either the operating or geological departments is needed, however and closer check on the carrying out of geological recommendations is advisable. For the latter purpose the use of geological recommendation sheets is being resumed.

Respectfully submitted,



M. B. Kildale

MBK:P

August 9, 1937

Mr. W. T. Benson, Chief Engineer  
Walker Mining Company  
Walkermine, California

*Walker  
development*

Dear Benson:

I wish to acknowledge receipt of your letter of August 7  
together with the sketches showing the advance made in the headings  
at Walker Mine during July, 1937.

Very truly yours,

TL:P

Tom Lyon

August 24, 1937

Mr. Tom Lyon

Offices

Subject:

WALKER MINE

Dear Sir:

As per your instructions I visited the Walker mine during the first week of August. The following report summarizes the present conditions as regards development work and maintenance of ore reserves at this mine.

Development work at the Walker mine, which had been lagging behind the necessary amount of work for some time, has picked up during the last two months and for the months of June and July amounted to 1100 feet and 1348 feet per month respectively. As a result the month of July was the first month to show an increase in the available ore reserves between the first and last of the month. This was due to the pushing of development work on the 800 and 900 levels in the Piute ore body and to the completion of the 761 drift in the footwall vein of the north ore body. The above development program led to an increase in the available ore reserves of the Piute ore body and led to the addition of a large tonnage of ore (100,000 tons) in the footwall vein at the south end of the north ore body, west of blocks 820 and 920. The presence of a wide low-grade (1% copper, 0.05 oz. gold, 0.75 oz. silver) vein in this area has been proven and doubtless some large stopes with low mining costs, such as 720 stope, can be opened up here. These will serve to help replace the similar large low-grade stopes in the Piute ore body which have been providing a large part of the recent production from the mine but which will be largely exhausted within the next few months. The larger portion of the ore produced from the mine during the last two months has come from the

2- Mr. Tom Lyon

August 24, 1937

Piute ore body above the 700 level and from the North ore body below the 700 level. New stopes are being opened up in the latter area (920, 930 and 1040 stopes) to replace those being mined but, as mentioned above, in the Piute area above the 700 the reserves are being rather rapidly depleted. The total reserves of available ore as of August first amount to about 1,327,000 tons, according to Mr. Droubay's report, of which about 550,000 tons are located above the 700 level and 750,000 tons are below the main tunnel. At present time about one-third of the tonnage produced, or about 450 tons per day, are being hoisted from the lower levels. As the reserves of readily accessible ore above the 700 are depleted an increasingly large percentage of the production is going to have to be hoisted. This will require enlarged and improved hoisting facilities as the present capacity for hoisting ore to the 700 level is only about 750 tons per day.

The most important development projects now being carried on are the 1017 drift north, the 1032 winze below the 1100 level, and both the 800 and 900 level drifts in the Piute ore body. The 1017 drift north has just reached the downward projection of the 712 ore body, assuming a southerly rake to the south edge of the ore body. If the rake below the 700 is directly down the direction of dip however, the south end of the ore will still lie about 350 feet ahead of the face. The 1017 drift is now being driven on line and about 150 feet west of the projection of the hanging wall vein of the 712 ore body on the 700 level. No crosscutting to either the hanging wall or footwall faults has been done for a distance of 900 feet along the drift. 1043 crosscut still lacks about 75 feet of reaching the hanging wall fault and should be completed. The country rock of 1017 drift north of the north ore body has consisted of massive finely-crystalline hornfels with many spots of epidote and is similar to some of the rock found on the footwall of the ore bodies on the 700 level. 1043 crosscut east has passed out of the massive epidote hornfels however about 75 feet east of the hanging wall

3- Mr. Tom Lyon

August 24, 1937

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1082 winze shaft had reached a depth on August 5th of 106 feet below the 1100 level. It is planned to continue sinking to the 1200 level where sump and station will be cut. If the north and central ore bodies are found to extend down to this level this will be the next main haulage and operating level. However it is believed that before extensive exploration is carried on here it would be strongly advisable to develop the ore zone on the 1100 level. It now appears probable that the Piute ore body may have decreased in size and strength quite abruptly between the 800 and 900 levels and should the central and north ore bodies show similar changes below the 1000 level (which it is not predicted that they will do but which is quite possible) exploration and development work in the 1100 level, prior to exploration on the 1200 would be most advisable and might save considerable expense in carrying on the work at the lower elevations.

On the 1100 level the vein under the fault as exposed on the station shows a width of 25 feet averaging 0.98 per cent ore. The crosscut into the hanging wall was stopped at a distance of 70 feet beyond the fault but still shows some mineralization in the face. This crosscut should be driven further to determine if any of the lode still exists further in the hanging wall of the steep fault just east of the shaft.

On the lower levels in the Piute ore body the drifts north and south have opened up ore for a distance of over 600 feet. 836 drift south after passing through a low-grade area shows good ore again in the face. 887 drift north

4- Mr. Tom Lyon

August 24, 1937

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In addition to the work now being carried on as above mentioned there are several other areas which offer opportunities for the development of important blocks of ore and where development work should be carried on as soon as feasible. These include the 517 ore body in the footwall of the 712 ore body; the 710 ore body (at the south end of 712) above the 500 level or between 605D stope and the surface; and the south end of the south ore body between the 700 and 1000 levels, including both the footwall and hanging wall veins. All of these areas offer opportunities for the development of important tonnages of new ore. Detailed recommendations for all this work will be made out in the near future.

The geological work at the Walker mine is being well handled under the direction of Mr. Droubay, who is working in close corporation with, and giving much valuable advice to the operating department. The development headings are mapped nearly every day and the valuable stope sections are posted up as soon as the

5- Mr. Tom Lyon

August 24, 1937

engineering measurements are available. Closer underground direction of the development headings by either the operating or geological departments is needed, however and closer check on the carrying out of geological recommendations is advisable. For the latter purpose the use of geological recommendation sheets is being resumed.

Respectfully submitted,

HEK:P

M. B. Kildale

June 17, 1937

Mr. Seth K. Droubay, Geologist  
Walker Mining Company  
Walkermine, California

*W. D. ...  
Walkermine*

Dear Sir:

In Mr. Lyon's absence I wish to acknowledge receipt of your letter of June 11, enclosing therein geological sketches and a Progress Report for development during May. Your sheet showing Available Ore Reserves has also been received.

It is somewhat indefinite as to when Mr. Lyon will return to Salt Lake. However, your letter will be handed him upon his return.

Very truly yours,

W. E. Preece

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

July 13, 1937

Mr. Tom Lyon, Chief Geologist  
Walker Mining Company  
Salt Lake City, Utah

*Walker  
Development*

Dear Tom:

Please find enclosed the regular monthly Geological Sketches, Development Progress Report, and the July 1st sheet for addition to the Available Ore Reserves.

Development progress has gained to a point where, from the July 1st figures, we are at least not losing ground. The total Mining Development footage was well over the 800 foot mark that should be done as a minimum when 45,000 tons are mined, but our Prospecting Development is still rather low. 1017 DN is the only heading that could be classed as such.

Practically all of our fast mining stopes in Piute are completed, and as soon as 665A Stope is pulled dry, we will have to depend on the large block of low grade on the south end of the North Orebody to make up for a large part of Piute Production.

The Ore Reserve sheet shows a decrease of only 4,429 tons which is a marked improvement over the past few months. There are two more blocks that I could have added developed ore, but needed a little more information to be sure.

Broadwater started to work on the 1st and is doing very nicely. He is spending a good portion of his time underground and will soon be able to take over his end of the mapping which will allow me more time with the stopes.

Respectfully yours,

*Seth K. Draboy*

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

*Mr. Hildale*

L. F. BAYER, MANAGER

June 11, 1937

Mr. Tom Lyon, Chief Geologist  
Walker Mining Company  
818 Kearns Building  
Salt Lake City, Utah

*Walker  
Development*

Dear Tom:

Please find enclosed geological sketches and a Progress Report for development during the month of May. I am also sending you the regular sheet for addition to the Available Ore Reserves with a 100 foot to the inch scale long section of the entire mine, showing the relative position and estimated tonnages of each ore block as listed on the sheet.

Our mining development is proving up as well as expected, but if comparative figures are used, the total amount is low. The Proposed Development sheet shows that a total of 19,860 feet of drifts, raises and crosscuts will develop 1,121,600 tons of ore or 57.5 tons of ore per foot. If we assume that the amount of pillar robbing equals the amount of ore we tie up in pillars, then our mining development should not run under 800 feet per month when 45,000 tons are milled. If we list all but 1017 DN and 1101 Crosscut East as mining development, we have a total of 701 feet for the month of May.

When Mr. Sales was here last trip, we discussed the feasibility of using a light diamond drill in conjunction with our development work. It seems as though they have done a good deal of work at Butte during the past year with the Mitchell type one-man drill, and have gotten some very low costs with them. This, and the fact that we have so many places where information from drilling would save expensive

an inconvenient crosscutting, convinced Mr. Sales that we could use a machine here to a good advantage. As a new machine of this type can be purchased and equipped for \$ 1,300.00 and holes drilled for very little over \$ 1.00 per foot, it can be shown where an outfit will pay for itself in replacing 200 feet of crosscutting with a large sized drift. I suppose Mr. Sales talked to you about it, for he said that he would recommend buying one, to you and Mr. Dugan. Incidentally I met young Mitchell while he was introducing these machines in the Grass Valley district; also I watched one operate over a two year period while working at Allegheny. They drilled for about \$ 1.00 per foot. Personally, I think that a machine would save us lots of time and money and I would like very much to see one purchased. I also realize that diamond drilling is not the most satisfactory method of prospecting, and that lots of ore can be easily missed. However, I feel that we have a good number of places to prospect where drill core would give enough information.

Bill Warren is leaving this month and Mr. Bayer told me they are sending a man from Butte to take his place. Bill is a very likable fellow and we all hate to see him leave.

Respectfully yours,

Seth K Droubay.

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

March 21, 1937

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

Dear Sir:

Please find enclosed a copy of the proposed development program, a sheet showing ore available for mining above the 700 level, and two letters from owners of mining properties. I answered the letters stating that I had sent them on to the Salt Lake office and that they would hear from there in case the company was interested.

The development program was drawn up during Mr. Dugans recent visit, and I have tried to make it self explanatory if reference is made to the 1937 Ore Reserve long sections. Work necessary to prepare reasonably assured ore blocks for mining is tabulated under the heading of Mining Development, and general prospecting is listed as Prospecting Development. Most of the mining development would be run in ore so a good portion of the cost would be returned from the values of the muck.

The sheet listing ore available for stoping above the 700 level, is a tabulation of our proven, recoverable rock that does not have to be hoisted. It does not include pillars except in the cases of a small tonnage that is now being recovered in the North Orebody, and those that will be taken from the Piute Orebody above the 700 sorting level south of the shaft. Very little ore north of the Piute Shaft is listed because it is uncertain how much of this blocky, caving ore can be recovered. An additional large tonnage of ore may be developed in blocks 720A and 610A of the North Orebody.

I have included this list because it may be useful in considering any additional capacity for our mill. We are using this rock at the rate of over 20,000 tons a month, and our mining costs will be higher when it is gone.

Very truly yours,

*Seth K Droubay*  
SETH K. DROUBAY *bmh*

March 31, 1937

Mr. J. F. Dugan  
General Superintendent of Mines  
International Smelting and Refining Company  
Offices

Dear Sir:

I have carefully considered the recommendations submitted by Mr. Droubay for development work to be done at the Walker mine. I have discussed the matter with both you and Mr. Beyer and while we are in accord in the matter I believe it would be well, as a matter of record, to approve the recommendations with the following comments:

In the first place it appears that the greatest opportunity for developing the most ore with the least work would be to continue to sink the 706 winze and develop the North and Central ore bodies on the 1100 foot level. I discussed the matter with Mr. Beyer during his visit to Salt Lake last week. At that time Mr. Beyer suggested continuing the winze to the 1200 foot level before any lateral development work was done and stated that an additional six months would be necessary to do this work. I told Mr. Beyer at the time that I did not believe that the situation at the mine would justify a delay of six months in the development work of the 1100 level. I wish to recommend that the drift North and South from 706 winze on the 1100 foot level for the exploration of the North and Central ore bodies be regarded as the most important of all development work that is outlined and that this work be pushed to the utmost. If it is possible to continue sinking the 706 winze at the same time that the drifts are being run on the 1100,

2- Mr. J. F. Dugan

March 31, 1937

with no sacrifice in the speed of the 1100 work, I believe that would be all right. However, I wish to again impress on you the importance of the development of the 1100 level and feel that this work should be done as rapidly as possible.

Very truly yours,

TL:P

Tom Lyon

March 31, 1937

Mr. Seth K. Droubay, Geologist  
Walker Mining Company  
Walkermine, California

Dear Red:

I have just written a letter to Mr. Dugan, a copy of which has gone to Mr. Bayer, approving the recommendations which you have made for development work.

I wish that you would send me each month a statement showing the recommendation numbers as you have them on the sheet submitted to me, when the work was started and the amount of work that was done and why those that have been started have been delayed, as it is almost impossible to keep up on everything unless we have some definite reports.

Please see that these are gotten out each month and send a copy to Mr. Dugan.

Very truly yours,

TL:P

Tom Lyon

cc: Mr. Dugan

March 31, 1937

Mr. J. F. Dugan  
General Superintendent of Mines  
International Smelting and Refining Company  
Office

Dear Sir:

I have carefully considered the recommendations submitted by Mr. Droubay for development work to be done at the Walker mine. I have discussed the matter with both you and Mr. Bayer and while we are in accord in the matter I believe it would be well, as a matter of record, to approve the recommendations with the following comments:

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2- Mr. J. F. Dugan

with no sacrifice in the speed of the L100 work, I believe that would be all right. However, I wish to again impress on you the importance of the development of the L100 level and feel that this work should be done as rapidly as possible.

Very truly yours,

TL:P

Tom Lyon

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

April 10, 1937

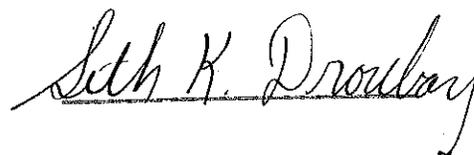
Mr. Tom Lyon, Chief Geologist  
International Smelting  
& Refining Company  
Salt Lake City, Utah

Dear Sir:

Please find enclosed the regular geological sketches for development during March, a revised copy of the Operating or Available Ore Reserves and a resume of development progress for the month of March with reference to the recently approved program.

The Piute shaft is again de-watered and work will be resumed on the 800 and 900 levels. The skip pockets are being enlarged and we should soon be producing ore from these levels. The headings will be extended as rapidly as possible. The 920 block in the North Orebody is looking better every day and I have every reason to believe that we will develop a large block of ground to the south of this; in the footwall of the 900 level in under 761 Drift North above. The grade may get lower going south, but so far we have proven a maximum width of nearly 100 feet of 1.45% Cu Ore with 942 Drifts North and South. (Crosscuts above the 900 level). We will crosscut into the footwall at intervals south.

Respectfully submitted,



SKD  
W

cc John F. Dugan

WALKER MINING COMPANY

DEVELOPMENT PROGRESS

MARCH 1st to APRIL 1st-1937

RECOMMENDATION  
NUMBER

7. 1100 station cut and crosscut extended 15 feet in hanging wall of fault. Crosscut is waste.
8. 2 Crosscuts, 1013B and 1014B, north of 706 Winze extended 12 feet each. Both in blocky schist but 1014B is slightly mineralized.
10. 1017 DN extended 140 feet. 1008 crosscut East extended 48 feet. Waste.
12. 761 DN extended 80 feet. 60 feet waste and last 20 feet in low grade ore (1% Cu).
15. 943 Crosscut West extended 30' in broken schist with small seams of mineral (.60% Cu). Ore in face. 942 Drifts (above the 900 sill) have proven an additional 35 foot width to 920 Block, and are still in Ore. (1.44% Cu).
17. 308 DN extended 30 feet. Low grade ore. (Plus or Minus 1% Cu) 310 Crosscut East extended 20 feet in waste.
18. 451 DN started. 5' in waste.
19. 558 Raise started. 5 feet Plus or Minus 3% Cu Ore.

Armed Geological Documents Collection, American Heritage Center, University of Wyoming. This material was prepared by John D. H. (1911-1988) for the U.S. Geological Survey. The material was prepared by John D. H. (1911-1988) for the U.S. Geological Survey. The material was prepared by John D. H. (1911-1988) for the U.S. Geological Survey.

# WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

March 19, 1937

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

Dear Sir:

Please find enclosed a copy of the proposed development plans drawn up during your recent visit also a copy of our regular operating ore reserve.

The development is tabulated under two headings with ore credited to the mining development only. The assay figures appear to be low, but this is due to the fact that large blocks of the lower grade ore are included, and so little information is known of many blocks that good safe figures are given. I have tried to make the table self explanatory, if reference is made to the 1937 Ore Reserve long sections.

Very truly yours,

*Seth K Droubay*  
MINE GEOLOGIST  
SETH K. DROUBAY *Lema*

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

L. F. BAYER, MANAGER

February 11, 1937

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

Dear Sir:

Please find enclosed geological sketches covering development for the month of January; also a February 1st sheet for addition to the Operating Ore Reserve. The 1002 Drifts are stope preparatory work on the 1000 sub-level, so 1017 DN and 551 DS are the only headings that operated to develop new ore. 551 DS and the associated cross-cuts were driven to explore the 710 Orebody directly above 705D Stope. No commercial ore was cut in these workings, so it looks as though 705D Stope has a sad looking future. The back of the stope is over half way between the 500 and 600 levels, so it looks as though the ore will pinch before going much higher. Values in the stope are falling rapidly. There is over 800 feet of backs above the 500 level and as surface indications look favorable, there is still a chance to develop ore along this shear zone that shows abundant magnetite, garnet, quartz and barite; the 700 level was barren.

The two cross-cuts that Mr. Sales wanted driven on the 1000 level between 706 Winze and the North Orebody have been collared. They will no doubt be completed in the near future, but are not being run just now.

Bill Warren started working in the this department last week and is busy helping me prepare the annual Ore Reserves. Mr. Bayer felt that I could do enough good in spending more time underground to warrant an assistant, so Bill was transferred as soon as you gave your approval. I think that the mine will benefit by our being able to give the stopes a little more detailed attention, and I am sure that Bill will develop into a good practical geologist. His operating experience and eagerness to learn should make it easy to train him for work such as we have here. I figure that as soon as we get the ore estimate in hand he will have become familiar enough with the department to learn the system of mapping and can spend a good deal of time with me underground learning the routine work. However, I would appreciate any suggestions you may have to make, wherein we could do more work to improve the

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

H. A. GEISENDORFER, MANAGER

December 9, 1936

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

Dear Sir:

Please find enclosed geological sketches for development during November and a December 1, 1936 sheet for addition to the Operating Ore reserve.

Exploration work is not progressing as rapidly as I would like to see it, but the operating department has had so much trouble with labor, the fire, and pumps that our most likely routes for developing ore have been shut off. They have resumed work in the shaft but have not crossed the fault on the 1100 level. They blasted several rounds toward it in cutting a station but as yet the formation is a dark crystalline schist with small stringers of ore. The Piute shaft is full of water again so it will be some time before mining is started again on the 800 and 900 levels. They were just enlarging the 800 pocket when the fire started. There is not much reason for the poor showing in 1017 DN, but we are assured that they will start hitting the ball there.

If you have any special standards to go by in preparing the regular Annual Ore Estimate, would you please let me know? I have started working on it and am

Page 2  
Mr. Tom Lyon

I have been granted my vacation from December 17th to 31st, so in all probability I will be away from camp during that time.

Best personal regards,

Yours truly,

Seth K. Drury

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. A. GEISENDORFER, MANAGER

October 9, 1936

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

Dear Sir:

Please find enclosed geological sketches for September development, a recommendation sheet, and an October 1st addition to the Operating Ore Reserve.

According to the plans and sections, the latest exposures of faulting in the lower North Orebody indicate that we are nearing the junction of the main hanging-wall and foot-wall faults. On the 700 level, the curving to the east of the foot-wall fault terminated the orebody, and the equivalent junction that is now exposed in the extreme north end of 1017 DN, would be in the hanging-wall at approximately the 16,700 N coordinate line. It will be very interesting to see how the mineralization will act in the next two hundred feet of 1017 DN. Let us hope that this junction does not end the ore, for this would shorten the North Orebody considerably. The extension of this heading was discontinued temporarily in favor of starting a pillar raise and the cut-off drift, in order to prepare the block for stoping.

The two Cross-cuts in the south end of Piute failed to expose any extended min-

the location of the samples that Kildale and I took on the property this summer. He is trying to get a government loan for developing it and would appreciate this favor along with any remarks Kildale might have that may assist him. As this information is available only from Kildale's report, I told Veak that I would inquire about it.

Respectfully submitted,

*Seth K Droubay.*

**WALKER MINING COMPANY**

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. A. GEISENDORFER, MANAGER

September 22, 1936

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

Dear Sir:

Please find enclosed a copy of our operating ore reserve and a report on the Chas. Nash Mining Property.

I was a little early in including 1020 and 1020 A stopes as prepared for August 1 st. They are not completely ready as yet.

Our total production for August was 41,754 tons @ 1.27% Cu. Chute assays average this total @ 1.41 %. The reserve shows a depletion of 31,145 tons @ 1.34 % Cu. while development and unlisted production account for the balance. It is hard to compare any one month with the reserve figures, for some of the ore bodies are so large and irregular. For the present I shall not try to alibi any of my figures, even though Piute seems to be producing at a lower assay figure than the reserve shows. Several months may

## WALKER MINING COMPANY

WALKERMINE  
PLUMAS COUNTY, CALIFORNIA

H. A. GEISENDORFER, MANAGER

September 7, 1936

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

Dear Sir:

Please find enclosed the sketches showing geology for development during the month of August; a report on the Deithlem Mine, and two letters regarding mines to examine.

The cross-cut east from the end of 904 DN looks encouraging. It is cutting a very good looking vein that lies on the hanging wall side of the heavy fault and seems to be detached from the mineralization that the north end of 904 DN is driven on. It is unbroken and projects fairly well to vein on the hanging wall exposed in 1017 DN.

It is necessary that we get better speed, drifting north in 1017 DN. It came into a barren zone that was broken and faulted. They were wasting so much time gorging around that we are now running it on lines.

I have been waiting to add the breakage and production of August to the Operating Ore Reserve that I promised to send you. I shall have it finished and mailed within the next few days.

Very truly yours,

*Seth W. Droubay*  
MINE GEOLOGIST

SKD  
W

## WALKER MINING COMPANY

WALKERMINE

PLUMAS COUNTY, CALIFORNIA

H. A. GEISENDORFER, MANAGER

August 8, 1936

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

Dear Sir:

Please find enclosed the geological sheets for development progress during the month of July and a report on a property that I examined a short time back. The report is very brief and as I am unfamiliar with the requirements of that particular branch of the department, I would welcome any comment on it.

Development is progressing nicely, especially on the 1000 level where 1072 Cross-cut picked up the extension of the vein as shown by the sketch. The occurrence of this massive unbroken vein on the hanging wall side of the main fault gives us additional, important evidence toward the downward projection of the Walker ore. 929B Cross-cut to the fault (from the top of 915 Raise) insures at least 25 feet of good ore in that area. The low assay of this raise warranted a little development before continuing it to the 700 level.

There is some good looking rock in the hanging wall of 1082A Winze but it may be an extension of the mineralization associated with the main fault as indicated by the maps at the 1000 level station. 619E Drift in the 712 Orebody will be started again in the near future. It was stopped until we could arrange for taking care of waste. The last round broke into the 517 fissure, so it should be in ore within the next 20 or 30 feet.

Mr. Geisendorfer just handed me a letter that I shall enclose. It is concerned with a property at La Porte, California. He thinks it sounds pretty good and suggested that I consult you in regards to my examining it.

I have compiled an operating ore reserve from which we can balance our production and see to a better advantage the life of each stope and prepare one at the same rate that we mine it. This will

October 10, 1930

Mr. J. O. Elton, Manager  
International Smelting Company  
Offices

Subject:

WALKER MINE

Dear Sir:

We have gone over mine development plans at the Walker, and desire to make the following recommendations:

- 1- Complete 706-A shaft to the 1000 level, then continue same to the 1100 level and drift north and south on vein.
- 2- Extend 1017 north on lines as a lateral to the North and 712 ore bodies and crosscut vein at intervals, to be determined as work proceeds.
- 3- Open up 10th level on Piute ore body from Piute winze.
- 4- Continue sinking Piute incline shaft.

We think the above suggested developments are of major importance and should be continued as far as possible without interruption. It might be advisable to continue 706-A shaft to the 1200 level instead of stopping at the 1100.

We feel that it is extremely important to determine, as early as

2- Mr. J. O. Elton

October 10, 1930

Subject: WALKER MINE

program of getting advanced information concerning the downward persistence of the ore bodies, and it will be necessary to develop the veins far in advance of what is needed in the ordinary course of mining.

The detail as to the point of starting and course of the 1017 drift north is a matter for further consideration.

Very truly yours,

RR:P

August 7, 1926

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

Subject:

WALKER MINE

Dear Sir:

I have read your memorandum of August 4th, regarding the Walker Mine, considering particularly program of development.

I approve of all the work contemplated, although I am not optimistic about the footwall vein. It should be explored to some extent, however.

Very truly yours,

PB/P

Paul Billingsley

June 18, 1926

MEMORANDUM

Tunnell called up by phone to report that D.D. hole under north outcrop had reached depth of 437 feet at angle of minus 40 degrees without showing any vein matter. Also that crosscut driven west from north end of 699 drift had gone 80 feet without finding vein.

I prepared accompanying cross section and sent following wire to Tunnell.

Paul Billingsley

# COPY OF TELEGRAM

June 18, 1926

H. R. Tunnell, Manager  
Walker Mine  
Spring Garden, California

CONTINUE FORTY DEGREE HOLE AT LEAST ONE HUNDRED FEET FARTHER  
STOP ALSO CONTINUE WEST CROSSCUT ON SIXHUNDRED LEVEL

PAUL BILLINGSLEY

June 2, 1926

Mr. H.R. Tunnel, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Sir:

Enclosed please find long section as requested in your letter of May 24th.

I approve your plan for a crosscut west from the face of 699 Drift north.

Neither Mr. Daly nor myself suffered at all from our adventures on the road to Portola. In fact, I collected another lunch bet when we missed the morning train.

Very truly yours,

# WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

May 24th, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Subject to your approval we are starting a crosscut west from the present face of 699 Drift North. This crosscut the the proposed diamond drill holes will explore the vein under the north outcrop. Please send me a copy of the long section showing the blocks in the vein designated by letters.

The two pilot raises agreed upon are being driven and cut samples will be reported later.

I was sorry to hear you had more trouble on the Portola read after I deserted you, but hope you did not suffer any ill effects from the exposure.

Very truly, yours,

H. R. Tunnell, Manager.

By, *C. Fisher*  
Secretary to Manager.

HRT:CEF

Western Union

39

# COPY OF TELEGRAM

June 1, 1926.

Straight Message.

Mr. H. R. Tunnell, Mgr.,  
Walker Mining Company,  
Spring Garden, California.

Discontinue hole "D" location of holes from surface approved.

Paul Billingsley.

**CLASS OF SERVICE**  
 This is a full-rate Telegram or Cablegram unless its character is indicated by a symbol in the check or in the address.

# WESTERN UNION

SYMBOLS	
BLUE	Day Letter
NITE	Night Message
NL	Night Letter
LCO	Deferred
CLT	Cable Letter
WLT	Week End Letter

NEWCOMB CARLTON, PRESIDENT

J. C. WILLEVER, FIRST VICE-PRESIDENT

The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.  
**Received at 278 Main St., Clift Building, Salt Lake City, Utah.**

FA150 58 NL

1926 MAY 31 PM 9 12

SPRING GARDEN CALIF 31

PAUL BILLINGSLEY

486

620 KEARNS BLDG SALT LAKE CITY UTAH

HOLE D HAS REACHED A DEPTH OF FOURTEEN HUNDRED AND TWENTY FEET WITHOUT CHANGE OF GROUND AND MR DALY AGREES TO DISCONTINUE IF YOU APPROVE STOP CONFIRM LOCATION OF HOLES ON SURFACE AT COORDINANCE ONE SEVEN ONE THREE NAUGHT NORTH AND ONE NAUGHT ONE ONE FIVE EAST STOP SOUTH SIXTY DEGREES WEST DOWN FORTY DEGREES AND SEVENTY DEGREES

H R TUNNELL.

10 115

## COPY OF TELEGRAM

April 16, 1926

H. R. Tunnell  
Walker Mine  
Spring Garden, California

I learned from Butte that Daly wants Hole D extended to one thousand feet total Stop I see no objection to complying with his wish in this matter

Paul Billingsley

# COPY OF TELEGRAM

April 14, 1926

H. R. Tunnel  
Walker Mine  
Spring Garden, California

You may stop Hole D and move to new set up

Paul Billingley

CLASS OF SERVICE	SYMBOL
TELEGRAM	
DAY LETTER	BLUE
NIGHT MESSAGE	NITE
NIGHT LETTER	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

# WESTERN UNION TELEGRAM

CLASS OF SERVICE	SYMBOL
TELEGRAM	
DAY LETTER	BLUE
NIGHT MESSAGE	NITE
NIGHT LETTER	N L

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NEWCOMB CARLTON, PRESIDENT

J. C. WILLEVER, FIRST VICE-PRESIDENT

The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.

RECEIVED AT 315 KEARNS BUILDING, SALT LAKE CITY, UTAH  
B28KH T 51

SPRINGGARDEN CALIF 130P APR 14 1926

PAUL BILLINGSLEY

SALT LAKE CITY UTAH

HOLE D HAS REACHED DEPTH OF FOUR EIGHTY SEVEN FEET STOP WILL CONTINUE  
UNTIL WE HEAR FROM YOU STOP HAVE CUT GRANITE FROM ONE NINETY TO ONE  
NINETY SEVEN FROM TWO TWENTY FIVE TO TWO THIRTY THREE FROM TWO SEVENTY  
FIVE TO THREE TEN FROM FOUR SEVENTY TO FOUR EIGHTY TWO

H R TUNNELL

253P

## CONFIRMATION OF TELEGRAM

Spring Garden, Calif.  
April 14th, 1926  
S. T. 1:30 PM

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

HOLE "D" HAS REACHED DEPTH OF 487 FEET STOP WILL CONTINUE UNTIL WE HEAR FROM YOU STOP CUT THROUGH GRANITE FROM 190 TO 197 FROM 225 TO 233 FROM 275 TO 310 FROM 470 TO 482.

H. R. Tunnell

39

If it's  
**SPEED**  
 you want  
 Don't  
 Write  
**TELEGRAPH!**

# WESTERN UNION TELEGRAM



NEWCOMB CARLTON, PRESIDENT

GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

CLASS OF SERVICE	SYMBOL
Telegram	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

In the date line on full rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.  
 MAIN ST., CLIFT BUILDING, SALT LAKE CITY, UTAH.

FA474 36

DUPLICATE OF TELEPHONE

HY. 2978

1925 APR 13 PM 15  
 MR BILLINGSLEY 115  
 1129P

SPRINGGARDEN CALIF 13 934P

BS

DEL 820 KEARNS  
 BLDG IN AM

PAUL BILLINGSLEY

961

620 KEARNS BLDG SALT LAKE CITY UTAH

HOLE D HAS REACH DEPTH OF FOUR HUNDRED EIGHTY SEVEN FEET STOP

WILL CONTINUE UNTIL WE HEAR FROM YOU JIVZA IXREG YHXEL YIGYR

YHYEM IXKEG YIBAT YIGYR YIBRA IXKEG YIFPT YIGYR YIKAC IXKEG YIZED

YIGYR YJAMY

J R TUNNELL.

APR 13 PM 11 24

1129782

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## CONFIRMATION OF TELEGRAM

Spring Garden, Calif.  
April 13th, 1926  
S. T. 7:30 PM

Mr. Paul Billingsley  
620 Kearns Building  
Salt Lake City, Utah.

HOLE "D" HAS REACHED DEPTH OF 487 FEET STOP WILL CON-  
TINUE UNTIL WE HEAR FROM YOU CODE JIVPA IXKEG YHXEL  
YIGYR YHYEM IXKEG YIBAT YIGYR YIBRA IXKEG YIFPT YIGYR  
YIKAC IXKEG YIZEO YIGYR YJAMY.

H. R. Tunnell

WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

April 3rd, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Your wire of March 31st was duly received.

We are drilling Hole "D", and will move  
to the new location for Hole "B", south of the  
dyke, as soon as this hole is completed.

The station for Hole "C" is being prepared.

Thank you for your advice in this matter.

Yours very truly,

H. R. Tunnell  
Manager.

By. *C. de Arrieta*



# EASTER GREETING



## WESTERN UNION TELEGRAM

NEWCOMB CARLTON PRESIDENT

GEORGE W.E. ATKINS FIRST VICE-PRESIDENT

RECEIVED AT

FA 89 7

1926 APR 4 PM 2 36 *ky 2978 j*

SPRINGGARDEN CALIF 4-125P

*1561*

PAUL BILLINGSLEY

*16872980*

620 KEARNS BLDG SALT LAKE CITY UTAH

KERAC EYOTS JIVPA IXPIK YHXEL YHYEM AGQAJ

DEARRIETA.

JA----257P-  
OUT OF TOWN--DELR OFC

IN AM----

## COPY OF TELEGRAM

April 5, 1936

Paul Billingsley  
care International Smelting Company  
Rico, Colorado

DEARRIETA VIRBS FROM SIRING GARDEN QUOTE HOLE D GRANITE  
FROM ONE HUNDRED NINETY ONE HUNDRED NINETYSEVEN PLEASE  
ADVISE AT ONCE QUOTE

Neil H. Freece

# COPY OF TELEGRAM

March 31, 1926

H. H. Tunnell  
Walker Mine  
Spring Garden, Calif.

All right to move hole B south of dike stop  
Will not be necessary deepen hole A

Paul Billingsley

39

WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

March 28th, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Due to a sudden burst of water in the mine, the hole being drilled, "B", was abandoned. I had planned to get back on this hole when the movement caused by the increase in water ceased, but am advised by Carey that the broken ground encountered will necessitate reaming and casing. Please let me know if a hole south of and parallel to the dyke, drilled from the fifth level, will make an acceptable substitute.

Hole "A" is 506 feet 10 inches deep, and I am waiting to hear from you again before extending it to cut the vein indicated by Guidel.

We are drilling Hole "D", and upon its completion will follow your recommendations as to the next work to

**WALKER MINING COMPANY**

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

March 22nd, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Your reply to my message of March 17th was delivered the morning of March 20th, but the diamond drill outfit was moved to Hole "B" after Hole "A" had reached a depth of 506 feet .10 inches. If your wire had arrived earlier, we would have continued as instructed. I am enclosing a sketch, showing the location of "B", which is as far north as we could go on the fourth level.

Blue prints giving assay returns of Hole "A" and of cut samples taken to date in the North Ore Body are also enclosed.

Yours very truly,

X

39

## COPY OF TELEGRAM

March 20, 1926

H. R. Tunnell  
Walker Mine  
Spring Garden, Calif.

Continue drill hole A until Gidel vein on two hundred  
is intersected Stop Please send us results checked sampling  
rapidly as possible

Paul Billingsley

# ANACONDA COPPER MINING COMPANY

RENO H. SALES, CHIEF GEOLOGIST  
F. A. LINFORTH, ASSISTANT CHIEF GEOLOGIST



BUTTE, MONTANA

## GEOLOGICAL DEPARTMENT

February 9, 1926.

Mr. Paul Billingsley,  
c/o Walker Mining Co.,  
Spring Garden, Calif.

Dear Paul:

Upon Mr. Daly's return from the Walker Mine we discussed the question of further prospecting. We both feel that the vein in the footwall of the main Walker vein should be tested by diamond drilling, preferably by two holes driven from the tunnel level at points 500 feet apart and about due westerly from the main oreshoot of the Walker vein.

We also have in mind some diamond drilling from the surface, particularly along the outcrop of the north end of the property. This work would of course have to wait until Summer.

We think a shaft or winze should be sunk to prospect the main oreshoot below the tunnel level, preferably at about 200 feet in depth.

1

February 9, 1926.

Mr. Paul Billingsley -#2

Mr. Daly has already written a letter to Mr. Kelley making recommendations along the above lines and Mr. Kelley in reply has authorized this work.

Daly is very anxious that you give the Walker mine a good going over and make recommendations for prospecting work and in regard to the drill holes above mentioned he desires that you lay out definitely the points where these drill holes are to start and their courses. He is now arranging to have a diamond drill sent down from Butte and it will be ready for shipment within a few days, so that it is desirable that these points be selected by the time the drill is ready for operation.

Mr. Daly thinks the holes from the tunnel level to the footwall vein should be inclined slightly upward, so as to cut the vein at an elevation comparable to the 500 or 600 in order that the vein will be cut opposite the position of the best ore in the main oreshoot. I do not think this is material, but he feels rather strongly about it, so I think we should comply with his wishes in that respect.

As soon as you have completed your examination, please

February 9, 1926.

Mr. Paul Billingsley -#3

From Mr. Daly's report on the conditions at the Walker I feel more than ever satisfied that the so called North ore body will not produce 2% ore or any where near it. It is evident that the higher grade ore occurs in irregular patches within the vein and that if mining is attempted along the lines originally contemplated, that is, to mine the vein as a whole, the grade will probably not average as high as 1-1/2%.

In writing me relative to your prospecting plan I think it advisable not to send copies of your letter to the Eastern office, but to send such copies to me or Mr. Daly. This will allow Daly to forward a copy of your letter to Mr. Kelley with whatever comment he desires to make. I think this is a better plan, from Mr. Daly's point of view.

Very truly yours,

*Paul H. Sales*

WALKER MINING COMPANY.

RECOMMENDATIONS FOR DEVELOPMENT.

February 26, 1926.

A. General Exploration.

1. Footwall Vein.

Drift North No. 757 has left the vein, which lies to the east of the present face. From a point 80 feet in from the adit tunnel, crosscut N. 45° E. until vein is cut, or for 50 feet if vein is not previously encountered.

D. D. Hole "A", from the foot wall of the 4th level about 50 feet south of Raise No. 2, run hole down 15° in direction S. 60° W. The hole is to be continued until the footwall vein is cut at about 400 feet, or to a total of 500 feet unless the vein is encountered or granite is struck and continues for over 30 feet. If vein or granite is struck, notify Geological Department.

D. D. Hole "B". Set up on the 4th level <sup>at Sta. 413</sup> in ~~footwall crosscut which lies 15 feet south of 561 crosscut.~~ Drive hole S. 80° W. down 35° for 500 feet unless excessive granite is encountered. Footwall vein should be between 300 and 400 feet.

2. South End Main Vein System.

Drift North No. 784. Where fault crosses on granite-schist contact, starting on south side of fault at a point 25 feet north of Station 761C, drive crosscut N. 75° E. for 30 feet, in order to prepare drill set-up and also to look for eastern edge of granite.

D. D. Hole "C". From face of above crosscut drive hole S. 80° E. horizontally for 400 feet.

3. Hanging Wall Exploration.

D. D. Hole "D". Set up in east face of 646s Crosscut. Drive hole N. 77° E. horizontally for 500 feet.

## COPY OF TELEGRAM

March 31, 1926

H. S. Tammell  
Walker Mine  
Spring Garden, Calif.

All right to move hole B south of dike stop  
Will not be necessary deepen hole A

Paul Billingsley

## WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

March 28th, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Due to a sudden burst of water in the mine, the hole being drilled, "B", was abandoned. I had planned to get back on this hole when the movement caused by the increase in water ceased, but am advised by Carey that the broken ground encountered will necessitate reaming and casing. Please let me know if a hole south of and parallel to the dyke, drilled from the fifth level, will make an acceptable substitute.

Hole "A" is 506 feet 10 inches deep, and I am waiting to hear from you again before extending it to cut the vein indicated by Guidel.

We are drilling Hole "D", and upon its completion will follow your recommendations as to the next work to be done.

Very truly yours,

  
\_\_\_\_\_  
Manager.

HRT:CEF

CC to Mr. Wm. B. Daly.

WALKER MINING COMPANY  
SPRING GARDEN  
PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

March 22nd, 1926

Mr. Paul Billingsley, Chief Geologist  
620 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

Your reply to my message of March 17th was delivered the morning of March 20th, but the diamond drill outfit was moved to Hole "B" after Hole "A" had reached a depth of 506 feet .10 inches. If your wire had arrived earlier, we would have continued as instructed. I am enclosing a sketch, showing the location of "B", which is as far north as we could go on the fourth level.

Blue prints giving assay returns of Hole "A" and of cut samples taken to date in the North Ore Body are also enclosed.

Yours very truly,

  
Manager.

HRT:CEF.

## COPY OF TELEGRAM

March 20, 1926

H. R. Tunnell  
Walker Mine  
Spring Garden, Calif.

Continue drill hole A until Gidel vein on two hundred  
is intersected Stop Please send us results checked sampling  
rapidly as possible

Paul Billingsley

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# ANACONDA COPPER MINING COMPANY

RENO H. SALES, CHIEF GEOLOGIST  
F. A. LINFORTH, ASSISTANT CHIEF GEOLOGIST



BUTTE, MONTANA

## GEOLOGICAL DEPARTMENT

February 9, 1926.

Mr. Paul Billingsley,  
c/o Walker Mining Co.,  
Spring Garden, Calif.

Dear Paul:

Upon Mr. Daly's return from the Walker Mine we discussed the question of further prospecting. We both feel that the vein in the footwall of the main Walker vein should be tested by diamond drilling, preferably by two holes driven from the tunnel level at points 500 feet apart and about due westerly from the main oreshoot of the Walker vein.

We also have in mind some diamond drilling from the surface, particularly along the outcrop of the north end of the property. This work would of course have to wait until Summer.

We think a shaft or winze should be sunk to prospect the main oreshoot below the tunnel level, preferably at about 200 feet in depth.

For further prospecting of the south ore body and the ore body more recently opened up at the south end we think diamond drilling could be used at an advantage.

1

February 9, 1926.

Mr. Paul Billingsley -#2

Mr. Daly has already written a letter to Mr. Kelley making recommendations along the above lines and Mr. Kelley in reply has authorized this work.

Daly is very anxious that you give the Walker mine a good going over and make recommendations for prospecting work and in regard to the drill holes above mentioned he desires that you lay out definitely the points where these drill holes are to start and their courses. He is now arranging to have a diamond drill sent down from Butte and it will be ready for shipment within a few days, so that it is desirable that these points be selected by the time the drill is ready for operation.

Mr. Daly thinks the holes from the tunnel level to the footwall vein should be inclined slightly upward, so as to cut the vein at an elevation comparable to the 500 or 600 in order that the vein will be cut opposite the position of the best ore in the main oreshoot. I do not think this is material, but he feels rather strongly about it, so I think we should comply with his wishes in that respect.

As soon as you have completed your examination, please write me giving me your definite recommendations for further prospecting.

February 9, 1926.

Mr. Paul Billingsley -#3

From Mr. Daly's report on the conditions at the Walker I feel more than ever satisfied that the so called North ore body will not produce 2% ore or any where near it. It is evident that the higher grade ore occurs in irregular patches within the vein and that if mining is attempted along the lines originally contemplated, that is, to mine the vein as a whole, the grade will probably not average as high as 1-1/2%.

In writing me relative to your prospecting plan I think it advisable not to send copies of your letter to the Eastern office, but to send such copies to me or Mr. Daly. This will allow Daly to forward a copy of your letter to Mr. Kelley with whatever comment he desires to make. I think this is a better plan, from Mr. Daly's point of view.

Very truly yours,

*Paul H. Sales*

RHS/AF

WALKER MINING COMPANY.

RECOMMENDATIONS FOR DEVELOPMENT.

February 26, 1926.

A. General Exploration.

1. Footwall Vein.

Drift North No. 757 has left the vein, which lies to the east of the present face. From a point <sup>80</sup> feet in from the adit tunnel, crosscut N. 45° E. until vein is cut, or for 50 feet if vein is not previously encountered.

D. D. Hole "A", from the foot wall of the 4th level about 50 feet south of Raise No. 2, run hole down 15° in direction S. 60° W. The hole is to be continued until the footwall vein is cut at about 400 feet, or to a total of 500 feet unless the vein is encountered or granite is struck and continues for over 30 feet. If vein or granite is struck, notify Geological Department.

D. D. Hole "B", Set up on the 4th level <sup>at Sta. 413</sup> in ~~footwall crosscut which lies 15 feet south of 561 crosscut.~~ Drive hole S. 80° W. down 35° for 500 feet unless excessive granite is encountered. Footwall vein should be between 300 and 400 feet.

2. South End Main Vein System.

Drift North No. 784. Where fault crosses on granite-schist contact, starting on south side of fault at a point 25 feet north of Station 761C, drive crosscut N. 75° E. for 50 feet, in order to prepare drill set-up and also to look for eastern edge of granite.

D. D. Hole "C". From face of above crosscut drive hole S. 80° E. horizontally for 400 feet.

3. Hanging wall Exploration.

D. D. Hole "D". Set up in east face of 646s Crosscut. Drive hole N. 77° E. horizontally for 500 feet.

4. South Ore Bodies below the 7th level.

Winze. Sink winze as planned in corner of 784 Drift, 55 feet north of Station 706. The winze is to be inclined so as to follow the vein downward for 100 feet or more, to the elevation proper for an 8th level.

5. Central Ore Body below the 7th level.

Crosscut. From a point in main haulage drift, 7th level, 140 feet south of south side of Raise No. 2, crosscut into hanging wall N. 60° E. far enough to provide for vertical shaft

February 26, 1926.

51 Central Ore Body below the 7th level. (Cont.)

whose center shall be 60 feet from the hanging wall vein, on the 7th level, and will be 60 feet in the footwall on the 9th level.

6. North End of Main Vein System.

Drift north in vein shown in 698 Crosscut for a distance of 100 feet. Further work will be guided by development.

When ground is free from snow, it may be decided to drive drill holes from the surface to intersect vein at 300 feet depth below the large outcrop on the Walker Extension boundary.

B. Development of Northern Ore Bodies.

1. Abandon entirely the south end of 640 Stope, as oxidation is too complete to permit hope for increase of grade.

2. Drift North 628As. (700 sorting level) Turn to course N. 25° W. At a point 108 feet north of Station 639s, crosscut to foot and hanging walls. At a point 8 feet north of Station 639s crosscut to the foot wall.

3. Drift North 678s. (700 Sorting Level).

Turn to the west until entirely in vein, with hanging wall on right hand side of the face. Then continue N. 5° W. until holed into Crosscut 685s.

At Station 630s, crosscut to foot and hanging walls.

At a point 60 feet north of Station 630s, crosscut to foot and hanging walls.

At a point 120 feet north of Station 630s, crosscut to the foot and hanging walls.

4. 695 Drift, 6th Level. At a point 15 feet south of Station 601, crosscut N. 75° E. to hanging wall schist, and S. 75° W. to the foot wall.

At a point 20 feet north of Station 625, crosscut N. 75° E. to hanging wall, and S. 75° W. to foot wall.

5. Drift South 643. (600 Sorting Level).

From the stope drift above this drift run two crosscuts to hanging wall, one approximately in line with 640A Raise, and one in line with 665A Raise.

6. Drift North 622A. (600 Sorting Level).

Extend north end on course N. 20° W. Crosscut to footwall at

February 26, 1966.

6. Drift North 622A. (600 Sorting Level). Cont.

25 foot intervals. This work should be guided by results of out samples on 6th level directly below.

7. Drift North 604A.

Turn north face to west until in vein. Then drift N. 17° W. for 100 feet with crosscuts at proper intervals.

C. Check Sampling.

Secure out samples in manner discussed verbally in the following places:

600 Sorting Level.

1. All new crosscuts from 604A.
2. In crosscut on 600 Sorting Level to 620A Raise.
3. Crosscut No. 668A.
4. All new crosscuts from 622A north end.
5. In crosscuts from 630 Stope

600 Level.

6. Crosscuts 672 and 673.
7. Crosscuts 675 and 669.
8. Crosscut 60 feet north of Station 625.
9. Crosscut 15 feet south of Station 601.
10. Crosscut 657.
11. Crosscut 624.

700 Sorting Level.

12. All new crosscuts from 628As.
13. All new crosscuts from 678s.
14. Crosscut 610As.
15. Crosscut 604As.
16. Crosscut 692s.

D. Stopes.

Since 660, 650, and 640 Stopes are very near the limit of grade, the number of stope samples of broken ore should be doubled in these stopes.

In stoping, greater attention should be paid to keeping on the vein, and furthermore, on the best part of the vein. This will be facilitated if the following pilot raises are kept ahead of stoping, with sufficient crosscuts to give average exposures of ore.

660 Stope.

- 606A Raise, keep 50 feet ahead of stoping.
- 620A Raise, keep 50 feet ahead of stoping.

February 26, 1926.

660 Stope, cont.

Raise from 600 Level, 10 feet south of 672 Crosscut.

640 Stope.

638A Raise, keep 50 feet ahead of stoping.  
Eventually, new raise 100 feet north of 638A Raise, provided  
samples and sub-level justify.

630 Stope.

640A Raise, extend to 5th level and crosscut wall to wall.  
661A Raise, extend to 300 Level.

Paul Billingsley  
Tom Lyon

WALKER MINING COMPANY  
SPRING GARDEN  
PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

February 4th, 1926

Mr. Paul Billingsley, Chief Geologist  
International Smelting Company  
618 Kearns Building  
Salt Lake City, Utah.

Dear Sir:

The following work is being done with  
the approval of Mr. Wm. B. Daly:

Drift North No. 757 is being driven to  
develop the vein shown in the main adit in the  
foot wall of the Walker vein. We will advance  
this drift parallel to the main workings and  
crosscut at intervals of 100 feet.

The road to Portola is closed and if you  
come here it will be by way of Spring Garden.

I hope the work outlined above meets with  
your approval, and that you will pay us a visit  
soon.

Very truly yours,

  
Manager.

HRT:CEF.

MINING COMPANY  
SPRING GARDEN  
PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

September 22, 1925.

Mr. Tom Lyons, Geologist,  
International Smelting Company,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

Dear Tom:-

Enclosed find blue print showing the location of vein cut by Crosscut West No. 647s, Drifts Nos. 629As and 630As and proposed exploration work on the vein.

Please let me have recommendations to develop this vein. We propose drifting on the sub level and exploring the vein by crosscuts as shown. After sufficient work has been done on the sub level to prove the value of the ore body, we propose crosscuts on the sixth and fifth levels as shown by the sketch.

The location of the crosscuts on the haulage level will depend on what is shown by development work on the sub level. I think it would be well for you to come out as soon as you can and give me your opinion about this proposed work as well as make an examination of Block No. 2 North.

The grade of ore cut by Crosscut West No. 647s is very encouraging but individual samples have shown considerable variation.

We are driving Drift North No. 628As in advance of the haulage level. I am enclosing a blue print of this work and would like to have recommendations for drifting north on the haulage level.

With kindest personal regards, I am,

Yours very truly,

  
\_\_\_\_\_  
Manager.

HRT: J T

Encls.

WALKER MINING COMPANY  
SPRING GARDEN  
PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

October 2, 1925.

Mr. Tom Lyon, Geologist,  
International Smelting Company,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

Dear Tom:-

I wish to acknowledge the receipt  
of your letter under date of Sept. 29th, 1925, authorizing  
a drift north and south on the ore disclosed by Crosscut  
West No. 647s.

I am glad to hear that Mr. Billingsley  
has returned to Salt Lake, and will meet him if he comes  
in by way of Portola.

With kindest personal regards, I am,

Yours very truly,

  
\_\_\_\_\_  
Manager.

HRT: JT

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September 29, 1925

Mr. H. R. Tunnel, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Sir:

I received the blue prints and your letter of  
September 22nd.

Mr. Billingsley is now back and will visit the  
Walker mine next week and will take up the matter of  
development work at that time.

During the interval you are authorized to drift  
north and south on the ore disclosed by crosscut 647 S.  
Crosscutting will be recommended by Mr. Billingsley.

Kindest personal regards,

Very truly yours,

EL/P

Tom Lyon

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September 11th, 1925.

Mr. Wm. Fraith, Vice President,  
Room 1825, 25 Broadway,  
New York, N. Y.

Dear Sir:-

Referring to your letter of September 3rd, on the subject of development and the proposed location of a shaft and winze.

I feel that this work should start as soon as possible. By this I mean the preliminary work. Cutting station and setting sheaves can be done at odd times. The actual sinking can be delayed until after the north ore body is producing 500 tons per day.

As to the choice between a shaft and winze in the main ore body, I believe after we sink vertical thru the vein we will have sufficient data to decide whether to continue vertical or on the foot wall of the vein.

The amount of water to be handled will be about the same in either case. The cost of sinking would be less in the case of the vertical shaft and we would have a working shaft from which to develop the new level. The inclined winze would be in ore and the foot wall of the vein would be prospected.

After giving the subject considerable thought I am still in doubt as to the best method and would prefer waiting until the foot wall of the vein is reached before making my decision. I will have an opportunity to take the matter over with Mr. Daly and Mr. Thayer in October before we sink beyond the foot wall.

Yours very truly,

  
\_\_\_\_\_  
Manager.

HMT:JT

CC to Mr. B. B. Thayer,  
CC to Mr. J. C. Elton,  
CC to Mr. Tom Lyon,

## WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

May 3, 1925

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

Dear Tom:-

When your letter of April 29th arrived, we had just decided to stop the advance in 712 drift north and do some lateral development work.

We have started a raise 242 feet north of station 765. This raise will be driven 45 degrees to the horizontal to cut the vein and will follow the vein to the sixth level and serve as an ore pass and for ventilation.

Further work in 712 drift north will wait until the sub-level drift is driven beyond the present face. We are working only one shift in the crosscut at the north end of our sixth level workings, and I believe we should get some diamond drill holes under the outcrop lying to the north before advancing the sixth level further.

Our work of blocking out ore in the south ore body and in the 2 $\frac{1}{2}$  ore body is beginning to show, and I believe you should come down again in a few weeks and look over these new places and revise the grade and tonnage in these ore bodies. We have finished 380 stope and have made a start on the pillars in 480 stope.

Yours very truly,



## WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

August 27th, 1925.

Mr. Tom Lyons, Geologist,  
International Smelting Co.,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

Dear Tom:-

Referring to your letter of August 25th,  
regarding the proposed development work.

We have resumed work in Crosscut West No.  
647 but have not cut the vein to date.

In the North end of the Sixth Level we  
are drifting on the best showing in Crosscut East No. 693  
at coordinates 16943 N., and 10280 E., but will wait, as  
you suggest, before driving long crosscuts East and West.

Regarding the proposed shaft and winze,  
I believe we should do the preliminary work at once and as  
you approve the locations suggested in my letter we will  
get the hoists installed as soon as possible.

It will not be necessary for me to decide  
between an inclined shaft on the vein and the proposed vertical  
shaft until the foot wall of the vein is reached below the  
seventh level.

Yours very truly,

  
Manager.

HRT:JT

CC to Mr. Wm. Wraith,

August 28, 1925

Mr. H. R. Funnell, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Bert:

By this time you have had my letter of August 25th regarding the development work proposed by you. I think that letter will give you authority to proceed with the winzes as you are able. Crosscutting east and west at the north end of the property may proceed when the north drift on the six hundred has advanced far enough to be beneath the central portion of the large mineralized area exposed on the surface.

I am leaving for Colorado Monday and expect to be gone about ten days. I will visit the Walker as soon as I return or about the middle of September.

With kindest personal regards,

Very truly yours,

TL/P

Tom Lyon

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August 25, 1925

Mr. H. R. Tunnell, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Bert:

I have your letter of August 19th regarding the proposed development work. I have already written Mr. Wraith suggesting that this work be deferred until you are in shape to do it, that is until the North ore body is in shape to produce 400 tons per day.

Regarding crosscutting at the north end of the six hundred, I would prefer to wait until the drift had reached a point beneath the best part of the prominent outcrop on the hill. If we should crosscut now I feel sure that we will be forced to duplicate the work later when the drift reaches that point. I think that one long crosscut both east and west should be enough.

The south end should be crosscut west using the crosscut from the top of the southern most raise and continuing it until it is well beyond any possibility indicated by the present work. A crosscut should be driven west from the five hundred using the empty slope for water.

The location for winzes that you have selected are satisfactory. I think, however, that the work should all be

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2- Mr. H. R. Tunnell

August 25, 1925

done in the vein. The water problem should not be worse in the vein than in the schist as one is as porous as the other and the only water that should be expected would come from cracks or faults which are liable to occur in either the vein or schist.

Very truly yours,

TL/P

Tom Lyon

CC: Mr. Wraith

## WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

August 25th, 1925.

Mr. Tom Lyons, Geologist,  
International Smelting Co.,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

Dear Tom:-

I wish to acknowledge your letter of August 20th, with inclosure of your estimate of ore reserves as of January 1st, 1925.

You will have received my letter of August 19th, regarding shaft sinking. I think this work should go ahead as soon as possible, and as it will take at least one month to do the work preliminary to setting the two hoists on the sub level, I believe we should start as soon as recommendations are received from your department.

The grade of ore encountered in the foot wall drifts on the sixth level is disappointingly low. The average of ore broken in these drifts is 1.34 per cent copper.

I am anxious to hear from you in regard to recommendations for development work. We are crosscutting west in 647s and expect to resume work in the extreme north end of the Sixth Level in a week or so. The vein as exposed by crosscut East No. 693 is more encouraging than anything we have seen in the North country, and while I am not prepared to predict better ore, I believe that we should get ahead as rapidly as possible.

Since your visit here with Mr. Daly we have encountered more difficulty with dilution in the Central Ore Body. Heavy falls of ground have been noted in 680 stope, in fact fragments from the hanging wall are falling constantly, and an increased amount of dilution is coming from the mill holes above the Fourth Level. We are sorting on the Sixth sub-level, but a great amount of fine waste is finding its way to the mill.

It is my judgement that starting a development program which will call for exploring the north end on the Sixth Level and the Walker Vein under the Seventh level is essential. Increased dilution and lower grade ore than was predicted from the North Ore Body will force us to speed up this development work from the time I receive your recommendations.

It may be well for you to plan another trip to Walker at your earliest convenience, in order that we can consider these matters in detail.

Yours very truly,

HRT:JT



August 20, 1935

Mr. Wm. Wraith  
25 Broadway  
New York.

Dear Sir:

Upon my return to Salt Lake after an absence of two weeks I found your letter of August 12th regarding the development work at the Walker Mine as suggested by Mr. Sales.

Unfortunately the development work necessary to prepare the northern ore body for stoping is considerably behind. There is no raise from the 700 to the 500 to ventilate this portion of the mine and serve as a supply raise for the stopes.

The enclosed long section which was brought up to date July 24 will show the small amount of work done in this ore body.

If the mill is run at a capacity of 800 tons per day, and 400 tons per day are drawn from the northern ore body it will be necessary to break about 30,000 tons of ore per month in this section of the mine. The development work consequently must be pushed to the utmost to accomplish the desired result.

Regarding the ventilation of the northern ore body, this has been jeopardized by the cave near the supply shaft which may eventually close the 500 level at a point near the supply shaft, making it necessary to drive a raise from the 500 to the surface.

2- Mr. Wm. Wraith

August 20, 1925

With the above work staring the operating department in the face I would hesitate to ask for any prospecting work in addition to that now in progress.

I fully agree with Mr. Sales as to what must eventually be done to prospect the ground adjacent to the mine but feel that the prospecting program should be deferred until the work necessary to open for stoping the northern ore body is accomplished.

Very truly yours,

TL/P

Tom Lyon

Encl.

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August 20, 1925

Mr. H. R. Tunnell, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Bert:

In answer to your letter of August 8th. I was not in town when Mr. Daly passed through so I know nothing of the ore reserve figures he will use in his report. I think however that he will include the estimate made by you and call it your estimate and the estimate made by this department and call it the geological department estimate. I am enclosing a copy of our estimate to complete your files.

I have just received a letter from Mr. Wraith regarding the development work suggested by Mr. Sales. I am writing Mr. Wraith that I believe this work should be held in abeyance until the slope preparation of the north ore body is complete.

With kindest personal regards,

Very truly yours,

Tom Lyon

TL/p  
Encl.

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*Rome*

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## WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

August 19th, 1925.

Mr. Tom Lyons,  
Geologist,  
International Smelting Co.,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

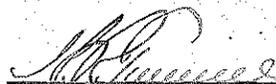
Dear Tom:-

Attached please find a copy of my letter of even date in reply to Mr. Wraith's letter of August 12th, of which you have a copy.

Also cross section of a proposed shaft and winze on which I would like to have your opinion and recommendation.

Please advise me fully by letter and if you think a visit to the mine would be helpful come out at your earliest convenience.

Yours very truly,

  
\_\_\_\_\_  
Manager.

ENcls.

HRT: JT

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August 19th, 1925.

Mr. Wm. Wraith, Vice President,  
Room 1825, 25 Broadway,  
New York, N. Y.

Dear Sir:-

I wish to acknowledge the receipt of your letter of August 12th, 1925., and the enclosure which is a copy of Mr. Reno Sales' letter to Mr. Thayer on the subject of development at the Walker Mine.

The proper location of shafts to develop the Walker Vein below the tunnel level was discussed at the time of Mr. Sales' visit and later I compared views with Mr. Lyons when he was at the mine. From these conferences, which confirm my opinion of what should be done, I feel we should follow at once three of the four suggestions offered in Mr. Sales' letter.

1: In the extreme north end development on the 500 level, I think we should continue Crosscut East No. 693 to prospect the ground lying in the hanging wall of our present work. A crosscut west would parallel Crosscut East No. 681 and would be of doubtful benefit until we extend our workings farther to the north. If no ore is found in Crosscut East No. 693 we should resume work on the present showing.

Work in the north end has been suspended until side swiping is completed on the sixth level.

2: I will wait for recommendations from the Geological Department before again suggesting diamond drilling to prospect parallel veins.

3: Crosscut West No. 647e is now being advanced to cut the low grade vein shown in Crosscut West No. 734.

4: I am writing Mr. Lyons today asking for recommendations to sink a winze and shaft at points where I believe they will prove the vein, below the seventh level, with the least expenditure of time and money. The proposed shaft would be located 100 feet south of the present inclined shaft, the winze 370 feet south of the point of intersection of the main adit and the vein.

Cont.

Mr. Tunnell to Mr. Wraith, Page 2.

The south winze should not make very much water and can be carried in the vein. In locating the shaft it will be necessary as you suggest, to keep away from the fissure and I believe we should sink a vertical shaft in the foot wall of the vein.

Mr. Sales also advises that work should be pushed as rapidly as possible north of 767 Raise to develop the better grade ore shown in Drift North No. 567. We are opening this ore on the Sixth Level and will prepare stopes above the Sixth Level as I feel that by so doing we will increase our breakage in the North Ore Body in less time than by doing the work from the Seventh Level.

Work of drifting on the Sixth sub-level, north of 767 Raise, will be resumed as soon as possible.

Cross sections showing the proposed shaft and winze are attached.

Yours very truly,

  
\_\_\_\_\_  
Manager.

HRT:JT

Encls.

CC to Mr. B. B. Thayer,  
CC to Mr. J. O. Elton,  
CC to Mr. Tom Lyons.

August 13, 1925.

Mr. H. R. Tunnell,  
Walker Mining Company,  
Spring Garden,  
Plumas County, Calif.

Dear Sir:-

Attached please find copy of a letter from Mr. Reno Sales, on the subject of development at the Walker Mine. You will note that Mr. Sales strongly presses upon the need of development work below the tunnel level at points that would be selected later and after a study of conditions.

I believe that such development work should be done. I think also that it should be done by shafts, drifts and cross cuts, rather than by diamond drilling, so I would suggest that this be given a study by yourself and Mr. Lyon, forwarding your recommendation at as early a date as possible. Before shaft sinking starts it will be necessary to catch up as much water as we possibly can above the tunnel level, sealing it off in such a way so that we will have as little water as possible to pump. This fissure does make a lot of water and we want to make it as dry as we possibly can in our shaft work. It would probably be advisable to sink the shaft in one of the wells to avoid water.

I would appreciate your advice on this subject and wish that you would talk it over with Mr. Lyon, giving me the benefit of your opinion.

Yours very truly,

Wm Wraith/M  
Enclosure:

CC: Mr. Lyon.

ROOM 1825  
25 BROADWAY  
NEW YORK

August 12, 1925.

Mr. Tom Lyon,  
Geological Department,  
International Smelting Co.  
Kearns Building,  
Salt Lake City, Utah.

Dear Sir:-

Attached please find copy of a letter I have written to Mr. Tunnell, also copy of a letter from Mr. Sales to Mr. Thayer. I would appreciate it if you would discuss this with Mr. Tunnell, and if you can come to an agreement as to the method to be pursued and as to the location of such development work, I would appreciate having your opinion at as early a date as possible.

Yours very truly,



WmWraith/M  
Enclosures:

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July 1925.

Mr. B. B. Thayer,  
25 Broadway,  
New York, N.Y.

Dear Sir:-

I visited the Walker Mine on June 29th and 30th. There are a few suggestions relative to present developments, and also as to possible plans for the future.

Of the work now going on I advise that drift 600-A should be discontinued, as it is being extended into territory which showed no ore on the 600 level.

Also that work should be pushed as rapidly as possible north from 757 raise to develop the better grade ore shown in 667 drift. I think it is quite desirable that we make a strong effort to develop this better grade ore as rapidly as possible, because the main orebody grade is, not running as high as anticipated.

As to future developments, there are four possibilities in the way of development which might find ore, and I will consider these briefly.

1: The extreme north end development on the 600 level is not showing favorable results. It cannot be said with certainty that the present drift is following the main vein disclosed at the surface. Before proceeding much further north, unless the ore improves in the present drift, I think crosscuts should be run easterly and westerly to make sure that we are under the best outcrop shown.

2: There are one or more veins in the foot wall of the main Walker vein and parallel to it. This was disclosed in the old survey crosscut tunnel and also in the main adit tunnel and in one or more drill holes driven at a former time. These



ground between these two ore shoots, and it might be cheaper and more satisfactory to sink two shafts or winzes.

I feel that it is quite urgent that in view of the ore showings in the mine at the present time one or more of these plans of development should be undertaken at an early date. In my own opinion the work of developing the 200 foot level below the main orebody should be the first work; as to the order in which these various pieces of work should be carried out subsequently, it is a matter to be determined from time to time.

Yours very truly,

(Signed) Reno. H. Sales

**WALKER MINING COMPANY**  
SPRING GARDEN  
PLUMAS COUNTY, CALIFORNIA

H. R. TUNNELL, MANAGER

August 8th, 1925.

Mr. Tom Lyons,  
Geologist,  
International Smelting Co.,  
821 Kearns Bldg.,  
Salt Lake City, Utah.

Dear Tom:-

I am preparing the Annual Report for the Walker Mining Company covering the period beginning August 1st, 1924., and ending July 31st, 1925.

Please give me Mr. Daly's figures for ore in place and any changes which were made in ore reserves during his visit to Salt Lake City.

Advise me fully regarding tonnages and grades in reserves and include recommendations for development work or mining methods.

Thanking you in advance for any suggestions you may make in preparation for this report.

With warmest personal regards, I am,

Very truly yours,

  
\_\_\_\_\_  
Manager.

HRT:JT

Approved Geologist Douglas A. Colquhoun, American Heritage Center, University of Wyoming. This material may be protected by copyright law (Title 17, U.S. Code). For our full copyright policy, please contact the AHCC by mail or email.

COPY

July 31, 1925

J. O. Elton, Esq.,  
Manager, International Smelting Co.  
Salt Lake City, Utah

My dear Sir:

I am sending you copy of letter which I requested Mr. Sales to write me relative to the Walker Mine.

I am sending it to you to be digested by yourself and Tom Lyon, but please do not take any action in the matter whatsoever, as I wish to await the return of Mr. Wraith and take the matter up with him, when he will take it up with the Western Department.

Very truly yours,

(Signed) B. B. Thayer

Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

COPY

July 20th, 1925

B. B. Thayer, Esq.,  
25 Broadway, New York.

Dear Sir:

I visited the Walker Mine on June 29th and 30th. There are a few suggestions relative to present developments, and also as to possible plans for the future.

Of the work now going on I advise that drift 600-A should be discontinued, as it is being extended into territory which showed no ore on the 600 level.

Also that work should be pushed as rapidly as possible north from 767 raise to develop the better grade ore shown in 687 drift. I think it is quite desirable that we make a strong effort to develop this better grade ore as rapidly as possible, because the main orebody grade is not running as high as anticipated.

As to future developments, there are four possibilities in the way of development which might find ore, and I will consider these briefly.

1. The extreme north end development on the 600 level is not showing favorable results. It cannot be said with certainty that the present drift is following the main vein disclosed at the surface. Before proceeding much farther north, unless the ore improves in the present drift, I think crosscuts should be run easterly and westerly to make sure that we are under the best outcrop shown.

2. There are one or more veins in the foot wall of the main Walker vein and parallel to it. This was disclosed in the old survey crosscut tunnel and also in the main adit tunnel and in one or more drill holes driven at a former time. These veins are low grade and I do not feel they present anything favorable as to ore prospects, and I think should be prospected only as a last resort.

There are no indications of veins either on the surface or underground, in the hanging wall of the Walker. Prospecting in that direction is therefore an entirely unknown territory. Possibly two diamond drill holes would determine the existence or nonexistence of hanging wall veins.

3. It is confidently expected that the Walker vein will be cut off by the large body of granite disclosed in the main adit, but it is quite impossible to estimate how far south this cut-off may be found in the present main level drift on the 700. The vein is almost entirely pinched out at the present south face, but there is a stronger footwall south of the vein which, although low grade, has not been sufficiently prospected. This south section presents a fair possibility but the prospects are not especially encouraging.

4. In my judgment the most desirable thing to do is to sink on the main vein to determine its possibilities in depth. For this purpose a shaft or winze should be sunk at least 200 feet at a point approximately 100 feet south of the old inclined shaft. The southerly part of the orebody, that is, lying to the south of the point where the main adit intersects the vein, should be explored on deeper levels. It is a matter of operating judgment as to

B.B.T. # 3

whether one winze or shaft would answer for the exploration of both the main orebody and the south orebody, or whether two winzes should be sunk for that purpose. Apparently there is a rather strong stretch of barren ground between these two ore shoots, and it might be cheaper and more satisfactory to sink two shafts or winzes.

I feel that it is quite urgent that in view of the ore showings in the mine at the present time one or more of these plans of development should be undertaken at an early date. In my own opinion the work of developing the 200 foot level below the main orebody should be the first work; as to the order in which these various pieces of work should be carried out subsequently, it is a matter to be determined from time to time.

Yours very truly,

REMO H. SALES.

B.

Copy Wm. Wraith- J.O. Elton

# WALKER MINING COMPANY

SPRING GARDEN

PLUMAS COUNTY, CALIFORNIA

39

I. L. GRENINGER, MANAGER

May 21, 1925.

Mr. Wm. Wreith,  
Vice President,  
Walker Mining Company,  
Room 1825, 25 Broadway,  
New York, N. Y.

Dear Sir:-

We have reached the following conclusions regarding the development work to be done on the north ore body. The work as we have planned it will determine the grade and tonnages as well as partially prepare for subsequent stoping.

Two prints are inclosed which indicate the position of the sub level and crosscuts, of course as the work progresses the position will be changed somewhat to suit the conditions encountered. The plan of the 700 shows the position of the raises which will hole the exploratory crosscuts from the sub level.

The results of the prospecting on the sub level to date have been somewhat encouraging as the average assay of all openings on the vein is 2.67% copper.

The actual plans in detail are as follows:-

Extend 677s drift north and 679s drift south until a connection is made. Crosscut at intervals of 50 feet as indicated on the inclosed plan of the sub level. This work will establish the southern margin of the north ore body. A raise will be started at this point and carried to the 300 level.

Extend 678s drift north with crosscuts at 50 foot intervals until the northern margin of the ore is reached.

From the 700 level raise every 50 feet to hole the crosscuts on the sub level will be driven as indicated on the inclosed plan of this level.

The 300 level cannot be extended north until at least one raise is completed from the 700 level.

While the grade of ore exposed in the present openings on the sub level is to be considered very good for this portion of the mine, subsequent openings may be considerable lower, but we hope the entire mass will average 2% as indicated by the 600.

Very truly yours,

*A. R. Ramsey*  
*Tom Lyon* ✓

CC Mr. Tunnell,  
CC Mr. W. H. Sales,

April 6, 1925

Mr. H. R. Tunnell, Manager  
Walker Mining Company  
Spring Garden, Calif.

Subject:  
Recommendations WALKER MINE

Dear Sir:

Regarding the development work at the north end of the 600 Level, I wish to make the following recommendations;

Extend No. 676 Crosscut east 25 feet beyond the present face. This will prove the area in which the electrical prospectors have projected a vein.

Extend the Main Drift No. 675 toward the north following if possible any mineralization which may occur.

Extend No. 677 Crosscut west to a point well beyond the projection of the footwall vein by the electrical prospectors.

Very truly yours,

Tom Lyon

TL/P

CC: Mr. Wraith  
Mr. Elton

February 16, 1925

Mr. H. R. Tunnel, Manager  
Walker Mining Company  
Spring Garden, Calif.

Dear Bert:

I wish to acknowledge receipt of your letter of February 13th relative to a drift on the 700 Level. I think that it will be a good piece of work and will recommend it.

RECOMMENDATION

From 712 drift north at a point approximately 145 feet south of 762 Raise drift north.

OBJECT

To reach a point beneath the good ore showing in 652 S for the purpose of extending a raise through from the 700 Level to the 600 Level on good ore.

Regarding raises 758, 664 S and 761. If the above mentioned raises are for the purpose of determining whether or not ore exists in the blocks above they should be charged to development. If they are for the purpose of ventilation, or strictly mining, that is waste or ore chutes then they should

2- Mr. H. K. Tunnell

February 16, 1925

be absorbed in mining and breaking ground.

With kindest personal regards,

Very truly yours,

TL/P

Tom Lyon

COPY

January 29, 1925

Mr. H. R. Tunnell, Manager  
Walker Mining Co.  
Spring Garden, California

Dear Sir:

I wish at this time to make a recommendation regarding the development work on the 600 North.

The vein has apparently gotten very lean, almost fading out entirely. The country rock through which it is now passing is shattered and somewhat sheared, although there has been no appreciable amount of movement.

The drift No. 675 has now advanced 25 feet beyond 676 crosscut east and is still in shattered ground. There are now two streaks of quartz in the face and considerable silicious material on the west side.

Drift No. 675 drift north should be continued north for at least 100 feet beyond 676 crosscut east. If the vein does not improve, it will be then necessary to drop back to crosscut 676 and continue the crosscut to explore the vein indicated by the electric prospecting, as there is a possibility of a split in the vein north of crosscut 666, as indicated on the enclosed sketch.

Yours very truly,

Tom Lyon

TL/E  
Encl.

CC: Mr. Wraith  
CC: Mr. Elton  
CC: Mr. Sales

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December 15, 1924

Mr. I. L. Greninger, Manager  
Walker Mine,  
Spring Garden, Calif.

Dear Mr. Greninger:

Answering your letter of December 6th relative to the extension of the 300 level to the north.

The drift north on the third level is now about 600 feet behind the drift north on the six. The last 150 feet of the drift on the 300 averages  $2\frac{1}{2}$  percent copper, so that drifting north on the third level, if the grade continues to be the same, should not be very costly.

In addition to drifting north on the 300, I think that a raise should be started from the six hundred in the ore near the north face.

It is, therefore, recommended that 393 drift north should be extended on the vein to a point over the ore in 667 and as much further as the ore continues.

It is also recommended that a raise be started on the ore showing in 667 drift north and extended to the 300 foot level.

Both the above recommendations should be pushed as

2- Mr. I. L. Greninger

December 15, 1924

rapidly as possible not sacrificing the speed of advance in 667  
drift north.

Very truly yours,

Tom Lyon, Geologist.

TL/P

CC: Mr. Wraith  
Mr. Sales

November 4th  
1 9 2 4

Mr. I. L. Greninger, Manager,  
Spring Garden, Calif.

Dear Sir:

The following recommendations will replace those issued by Mr. Billingsley, July 28th, 1924.

400 Ft. Level. Work on this level may be considered complete, unless the information disclosed by 750 Raise warrants drifting further to the south.

500 Ft. Level. The work on the south end of this level will be suspended until 740 or 750 Raise reaches a point near this elevation where sufficient ore is disclosed to warrant the further extension of this level to the south.

600 Ft. Level, North End. Drift No. 667 will be extended north in the vein until it has reached a point 200 feet north of No. 666 Crosscut East where the vein will be crosscut to the limit, both on the foot and hanging wall sides. The drift north will then be resumed, following the best ore disclosed in the crosscuts.

700 Ft. Level, North End. The 700 ft. level is being extended to the north, and is to be used as the main haulage level. As constant watching is required to keep the drift in the foot wall of the vein, no direct course can be given. The drift will therefore be run under the supervision of Mr. Greninger.

700 Ft. Level, South End. Drift north on a vein disclosed by the main haulage level about 590 feet west of the

Mr. I. L. Greninger - 2

November 4th, 1924

main orebody.

740 and 750 Raises are both exploring the vein, and will be changed to development account.

Electrical Prospecting. Mr. Mueser has submitted maps showing the location of several orebodies both at the north and south ends of the present workings. It is suggested that these projected orebodies be prospected. Mr. Greninger may select the points that coincide with best mining practice, and charge the same to exploration account.

Yours very truly,

Tom Lyon, Geologist.

TL:D

July 28, 1924

Mr. I. L. Greninger, Manager  
Walker Mining Company  
Spring Garden, California.

Dear Sir:

After examining and mapping the advance work in the Walker Mine, I wish to make the following modifications in recommendations for development work.

400 Level. 401 lateral has followed the hanging wall vein southward to the dike in 415 Crosscut. This dike has offset the south end of the main vein to the eastward; and will presumably do the same to the hanging wall split. The latter should be looked for by a crosscut due east from a point between the dike and Station 429.

500 Level. The south drift has diverged from the vein, and 563 Crosscut and 564 drift are in the footwall. About forty feet beyond Station 578, the latter drift begins to show the edge of the vein along the eastern side. It should be turned to the east, or left, sufficiently to disclose the full width of the vein, which should then be followed to the dike. This will be encountered in twenty or thirty feet, and the drift should be continued through it with no change in the course. When through the dike, turn to the left to pick up the vein again.

600 Level. At the north end, 666 Crosscut is penetrating into solid vein quartz east of the north-south fault. Apparently, the fault and vein are nearly parallel, which would indicate that this eastern block may not finally be cut off to the north for some distance. This being the case, it will be

2- July 28, 1924

advisable to suspend work on 616 Drift west of the fault, and to do the northward drifting within the vein east of the fault. This will enable the rock broken to go as mill ore.

I, therefore, recommend that when 666 has advanced to the hanging wall, and has determined its position, a new drift north be started within the vein close to this wall. If necessary, the turns into 616 Drift can be smoothed out by cutting out corners.

700 Level. North End. 712 Drift North is now directly below 609 Crosscut, and is in solid vein quartz. The hanging wall of this quartz was entered about thirty feet from the present face. The drift should be turned to a course of N 16° W, which will take it through the heart of the vein, getting gradually over to the footwall, which it will approximately follow after the first 250 feet. When a point directly below 613 is reached, crosscut to hanging and footwalls of vein in order to pick up the downward projection of the small rich bunch that showed in 613.

700 Level. South End. At a point near Station 709, in 703 South Drift, the vein was cut off by small north-south-east dipping faults. If these have the same throw as similar faults already encountered, they will throw the vein to the east, in which case the remaining southern part of 703 Drift is in the footwall. I believe it will be well to determine the position of the vein in this area before proceeding further with the preparation of the sub-level at this end. A short crosscut due east from Station 709 will serve this purpose.

(Signed) Paul Billingsley

June 2, 1924

Mr. J. O. Elton, Manager  
International Smelting Company  
O F F I C E S

Subject WALKER MINE

Dear Sir:

After examining the most recent developments at the Walker Mine I revised the recommendations as follows:

700 Level- South End. Stop 734 crosscut. This has served its purpose by cutting the large vein to the west of 703 vein. The large vein is low grade here, as it was in the main tunnel.

Resume drifting south in 703 drift. The vein here continues good and must be explored farther south. Rock will go for ore.

Raise from 703 drift where best for mining practice.

North End. Continue 712 on same course. This has encountered the vein, the same block no doubt as that in 637 Sub-level above. It carries enough copper in 712 to go to the mill.

600 Sub-level. Stop all work as the 712 face is now in the vein at a point directly below the north face of 637 S, and the vein can be best explored from this point on the 700 level.

600 Level- North End.- Turn 616 to course N 5 deg. W which is parallel to the fault which has cut off the vein. The new course should lead to the vein northwest of the fault, according to the surface evidence as projected to this level. After 90 feet on the new course a crosscut should be run N.

2- June 2, 1924

85 deg. E to reach the good ore on the hanging wall of the vein East of the fault. Rock goes for waste until vein is recovered.

500 Level- South End.- Continue 504 drift on course S 28 deg. to 30 deg. E according to strike of vein. Rock goes to mill. Vein on this level is materially better than it was either on 300 above or 700 below.

The above recommendations were given in writing to Mr. Greninger.

Very truly yours,

(Signed) Paul Billingsley

April 4, 1924

Mr. V. A. Hart, Manager  
Walker Mine

Dear Sir:

This will confirm our conversation of this afternoon.

It seems clear from your description of the ground in the north end of the 600 level and in the intermediate level above the 700 that further work is inadvisable there for the present. I take this occasion therefore to record the following recommendations from the geological department.

1. Stop recommendation No. 4, issued March 5th (Sub-level)
2. Stop all work at north end of 600 until geological examination can be made, except last crosscut east, just started, which should be continued to hanging wall of vein if still in vein matter.

Very truly yours,

(Signed) Paul Billingsley