

THE WALKER MINE  
PLUMAS COUNTY, CALIFORNIA

December 10, 1942

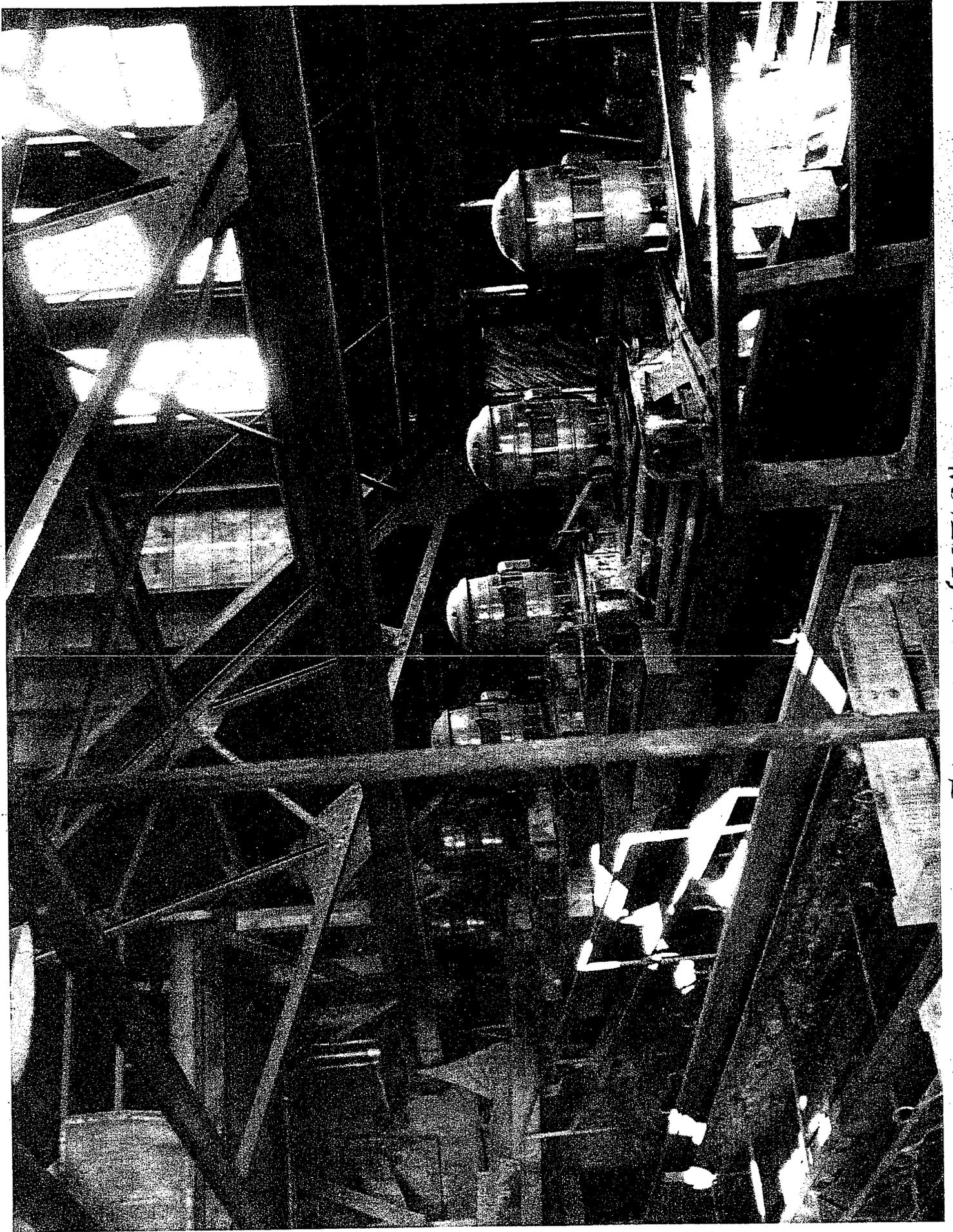
*Property of  
H. A. Geismann  
1931 Napa Ave  
Berkeley, Calif.*

Prepared By  
HENRY J. KAISER COMPANY  
Development & Engineering Division



TYPICAL ROAD TO GENESSEE

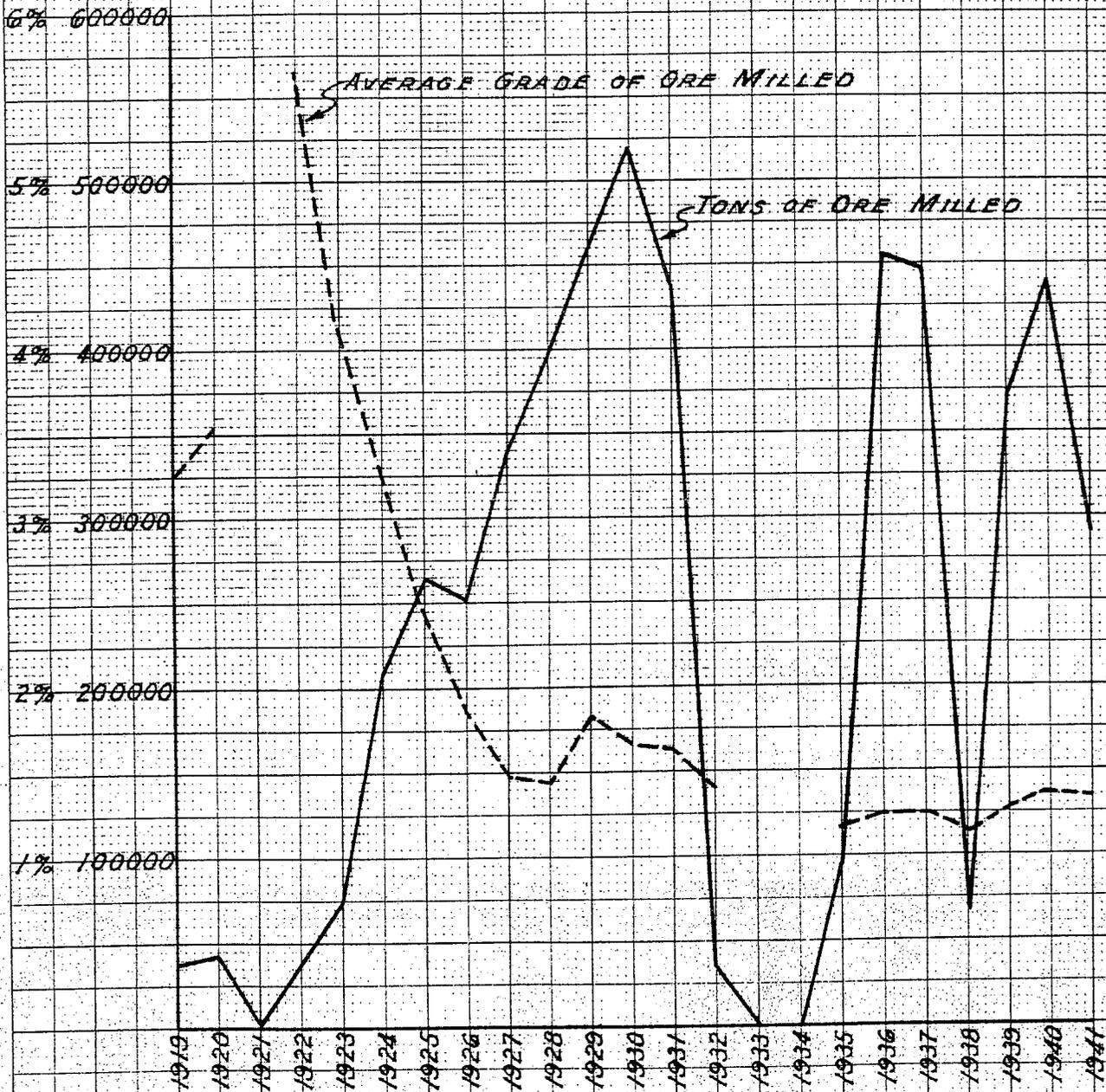


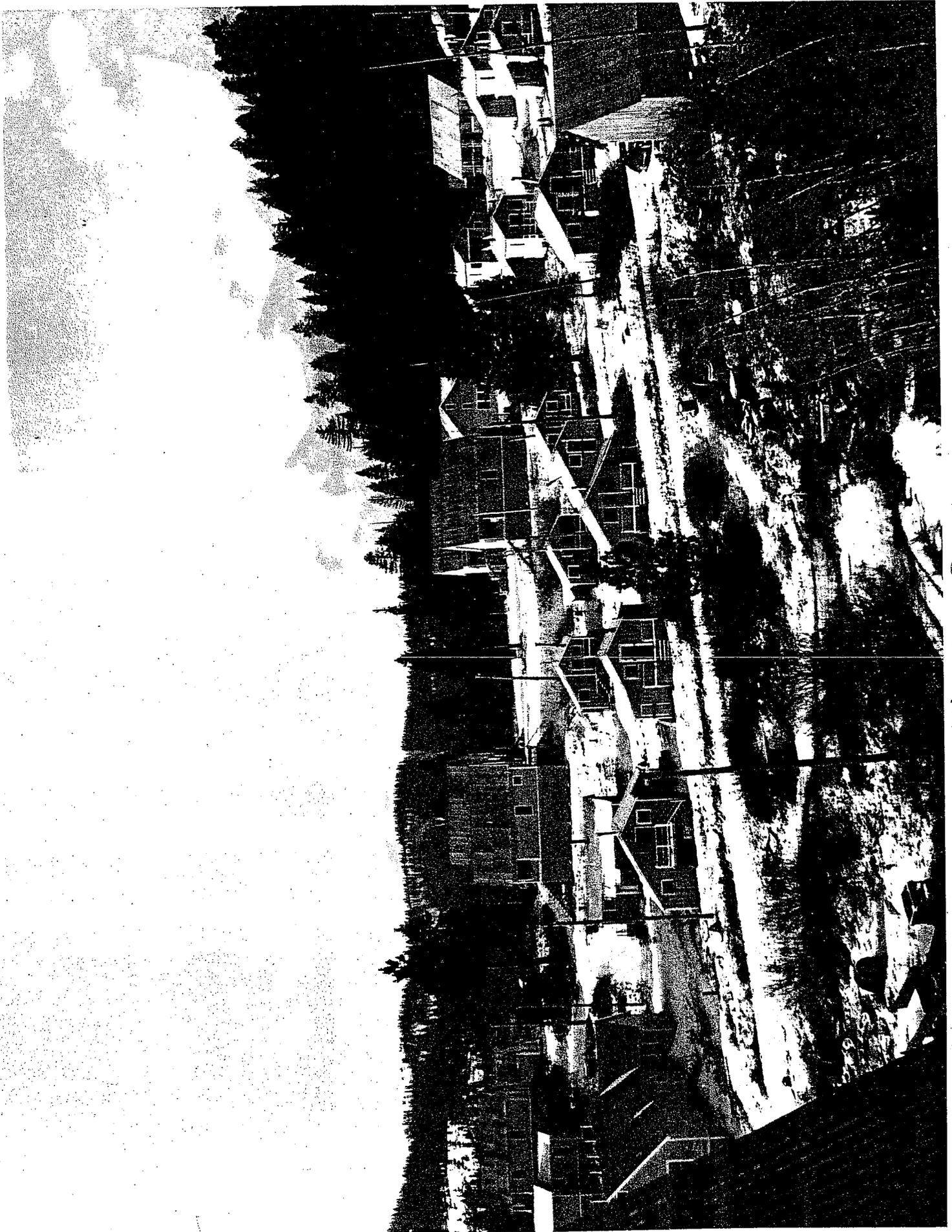


FLOTATION SECTION

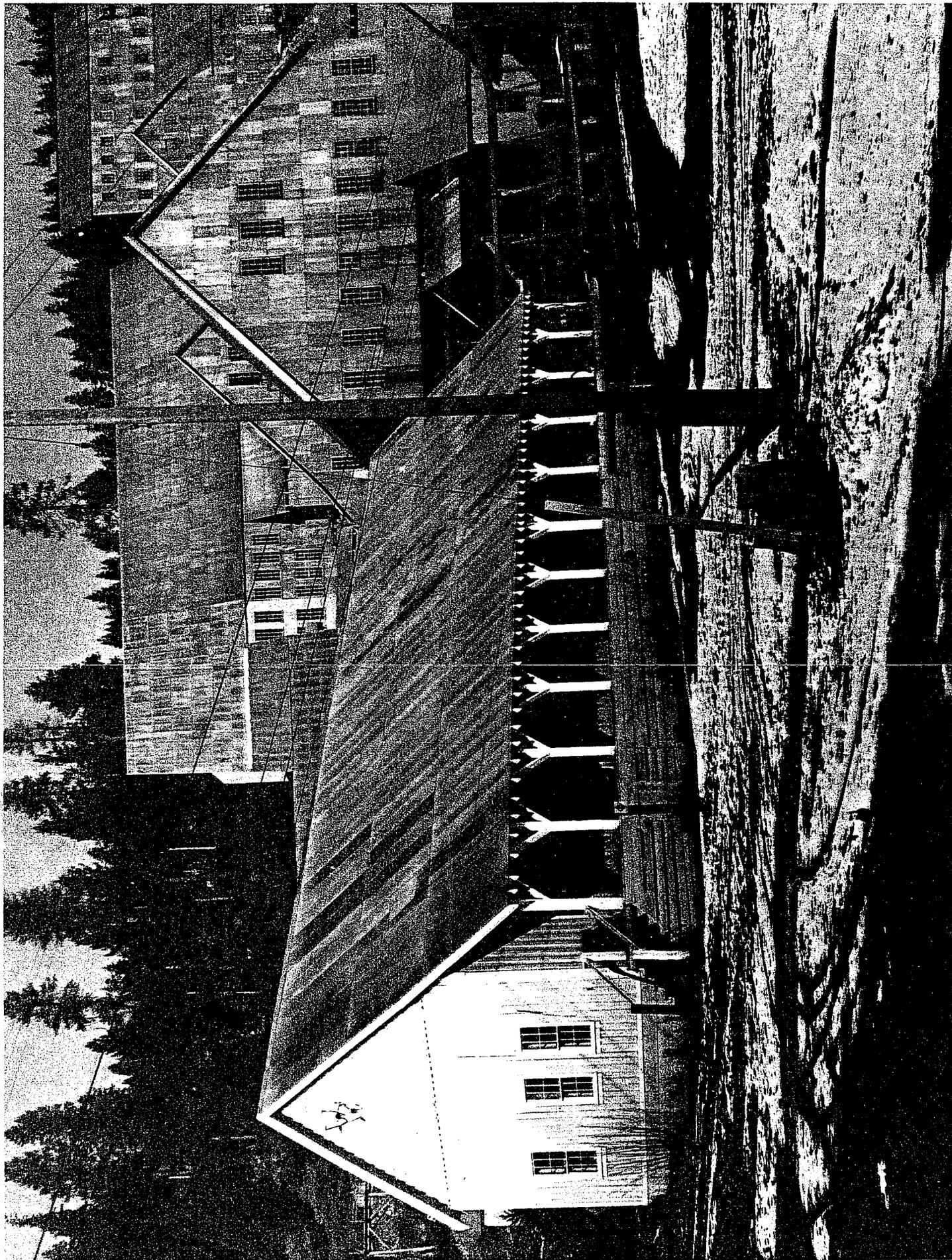
# WALKER MINE

## TONNAGE and GRADE of ORE MILLED





VIEW OF CAMP



WAREHOUSE - MILL BUILDING ABOVE

## INTRODUCTION

As authorized under the letter of intent from the War Department, Office of the Chief of Engineers, and by the District Engineer, to the Kaiser Company, Incorporated; the Walker Mining Company, owners of the Walker Mine, Plumas County, California have been contacted and reports on their operation of the described property have been obtained.

The Kaiser Company has made as complete a check of the property as was possible in the limited time available, and has studied maps and data of the Walker Mining Company.

It is our conclusion that the mine could produce copper concentrates at a cost of \$4.00 per ton on a 500-ton per day basis for approximately two years. These concentrates, when smelted would yield  $3\frac{1}{2}$ -4 million pounds of copper yearly, with a chance of increasing the ore reserves by additional exploration work.

The mine and mill could be readied for operation within thirty days time.

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RECONNAISSANCE SURVEY OF WALKER MINE

PLUMAS COUNTY, CALIFORNIA

A reconnaissance trip to the Walker Mine was made on Friday, December 4th. The party was composed of the following members:

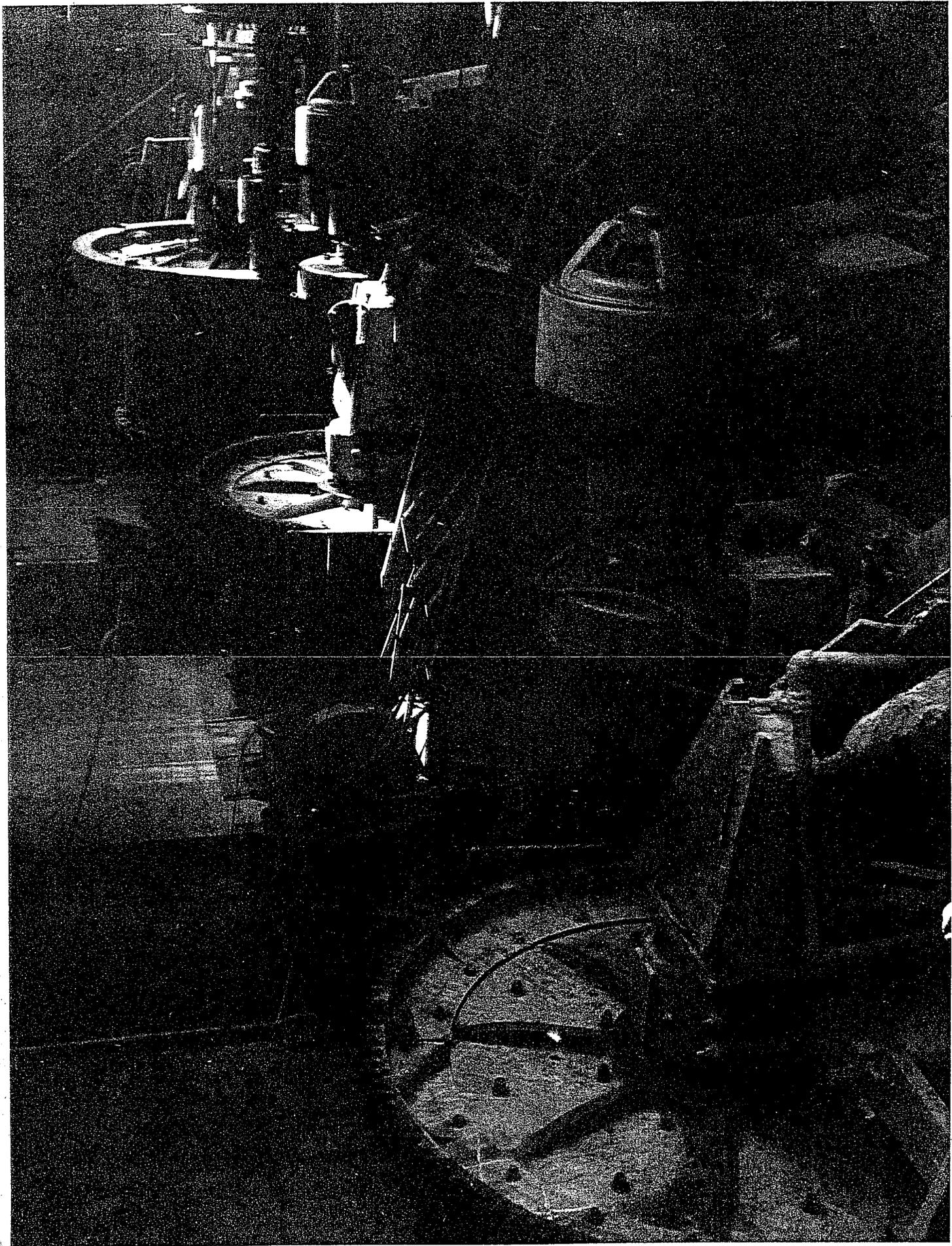
Benjamin T. Rogers, Major, U. S. Army Engineers,  
Resident Engineer.  
R. E. Knight, Manager, Henry J. Kaiser Company  
Dev. & Eng. Division.  
J. E. Winter, Chf. Design Engineer, Henry J. Kaiser Company,  
Dev. & Eng. Division.  
R. E. Frankenberger, Chf. Estimator, Henry J. Kaiser Company,  
Dev. & Eng. Division.  
W. C. Laut, Master Mechanic, The Permanente Metals Corporation.

The party left Oakland Thursday evening, December 3<sup>rd</sup>, stopped overnight at Quincy, California, and arrived at the mine Friday morning at eight o'clock. There they met the following party members who had reached the mine the previous day:

E. P. Hurt, Geologist, Henry J. Kaiser Company,  
Dev. & Eng. Division.  
Augustus Locke, Consulting Geologist, Henry J. Kaiser Company,  
Dev. & Eng. Division.  
H. A. Geisendorfer, former manager of the Walker Mine Company.

The distance from Oakland to Quincy is 296 miles, and two routes lead from Quincy to the mine. One route follows the state highway number 24 to Portola, a distance of forty-five miles. A dirt road with easy grades leads to the mine from a point two miles east of Portola. The length of this dirt road is 22 miles. It was found in good condition but in many spots the road was frozen. Many points gave evidence of being extremely soft and with poor bottom in warmer weather. Any heavy trucking over this route would require the use of considerable rock surfacing but no major construction. The other route from Quincy was followed by the party upon their return from the mine Friday afternoon, with considerable saving in mileage. This route follows a mountain road from the mine to Genessee, a distance of 12 miles. This portion of the road is through very rugged country and has a number of stiff grades and sharp turns. The road for the most part has been cut in the side of a slope and except in dry weather the passing of oncoming vehicles would have to be done with extreme caution. From Genessee to Taylorsville the road is a good dirt road for approximately 9 miles. From Taylorsville the road is a surfaced two-lane state highway. The total distance of this route from the mine to Quincy is 40 miles.

Mr. Geisendorfer, Mr. Locke and Mr. Hurt delayed their return from the mine for two days to make a further study of the ore reserves.



FINE GRINDING SECTION



GENERAL FACILITIES

AT

THE WALKER MINE

The Walker Mine was shut down in the fall of 1941 and some of its equipment was advertised for sale. At the present time, however, only a small amount of equipment or supplies have been sold and the mine, mill, and camp was found generally to be ready to reopen following a more complete check-up and conditioning normally required in any plant shut down this long. No essential equipment is lacking, but worn parts should be replaced to prevent serious shut downs after operations commence. Warehouses appear to have a good stock of general supplies and repair parts. A reasonable supply of reagents for the mill appears to be on hand. Main power lines are still connected but the distribution lines to the various camp buildings generally need to be reinstalled, together with a few feeder lines to some of the panel boards. Telephone lines will need replacing. Some facilities such as cooking utensils for the camp, mattresses, cots and so forth will be needed, although a few cots are still on hand. Some small tools will also be required although the warehouses appear to have quite a general variety.

Mr. Frank Irwin, general clerk who has been in charge of the property with only the assistance of a watchman, has an inventory of all plant equipment and supplies taken immediately following the shut down of the plant a year ago. The list has not been revised to account for the pieces of equipment and small tools sold or damaged, but he has kept a record of all shipments from which the inventory record may be corrected.

## SURVEY OF MILL CONDITION

### ORE BIN

The ore is transported from the mine in cars drawn by electric locomotives and dumped into the cylindrical steel bin, 22,000 ton capacity. The bin is in excellent condition. The ore is discharged from the center bottom of the bin on a rack and pinion operated gate to a 3'6" x 16' pan feeder.

The pan feeder should be overhauled at once, but can be operated in its present condition. One tail sprocket has been replaced by an ordinary plate and is badly worn. The rollers should be replaced and need new pins and bushings for the chain. Before starting up this feeder it should be dismantled and thoroughly gone over.

The feeder is driven by a long belt drive from the motor to a worm gear reduction. The low speed side of the worm gear is then reduced through a spur gearing to the head shaft. The gears are in good condition.

### PRIMARY CRUSHER

The feeder discharges over a grizzly into the primary jaw crusher. The grizzly is worn out, but two spare grizzlies are in the warehouse. The primary crusher is a 15 x 24" Traylor jaw crusher. The jaws are worn. There are several replacement jaw and toggle plates around the mill. The bearings should be cleaned and inspected before starting up this crusher. From its external appearance, the crusher seems to be in good condition. The jaw crusher discharges on to an 18" belt which conveys the ore to the secondary crusher. The belt has been removed from this conveyor, has been rolled up, and is now in the warehouse. The belting is badly cut, but can be used for a limited period of time. There is a magnet to extract trap iron from the ore before it enters the secondary crusher. It appears that the drive, the troughing rolls, and return idlers are in good condition. This conveyor discharges into the secondary crusher.

### SECONDARY CRUSHER

The secondary crusher is a 5½' Symons Cone crusher. It is driven by 200 h.p. 2200 volt Westinghouse induction motor through a twelve section V-belt drive.

There are spare eccentric bushings, cones, drive shaft with bevelled gear, and extra crushing cone, and the spare shaft mounted with mantle and two new mantles. From an external appearance the crusher seems to be in excellent condition.

## FINE CRUSHING

The discharge from the crusher is fed to a belt bucket elevator. The belt and buckets seem to be in good condition. The casing is wood, the drive for the elevator is in operating condition, but in the very near future some of the gears and pinions will have to be changed.

The material from the bucket elevator is discharged on to a 4 x 8 vibrating Allis Chalmers screen. The V-belt drive and anti-friction bearings is throughout. The screen is a single-deck screen. There are several replacement screens in the mill. The screen is in excellent operating condition.

The undersize from the screen is delivered to a pair of rolls. They are Anaconda type crushing rolls, and it is counter shaft belt driven by a 100 h.p. motor. The rolls should be completely overhauled before starting. The shells are badly worn; all liner plates should be replaced. The side of the casing is cracked and worn through. Three spokes of the fly wheel are broken but have been patched with gusset plates. The rolls have been operating in this condition.

The material which passes through the rolls is discharged into the bucket elevator and again goes under the screens. The undersize from the screen is fed on to a belt, which transports the crushed ore to the fine ore bins in the mill building. The bins are in very good condition.

The material is discharged from the belt mentioned above into the bins by means of a tripper. The tripper is belt driven. The drive wheels are badly worn and should be replaced before starting up the mill.

The main drive pulley is a cast iron pulley and should be replaced at once. The pinion should be replaced for the tripper. The belt on the conveyer has been removed and rolled under the tail pulley and seems to be in good condition. The conveyer is driven by ten horsepower motor through a 12' flat belt drive on to a counter shaft, thence through spur gears to the head pulley. The gear and pinion are worn. The pinion will have to be replaced in the very near future. The head pulley is 19 $\frac{1}{2}$ " face by 30" diameter cast iron.

## MILLS AND CLASSIFIERS

The fine grinding is done in Marcy ball mills. The ore is fed from the bins to the four ball mills by belt conveyors. The gates are of the rack and pinion type. All of the belt feeders should be dismantled, inspected, and overhauled. Some of the pulleys are in poor condition. The rolls and idlers should be overhauled and the drives should be overhauled and inspected.

The discharge from the feeder conveyors is discharged into the center of the mills. The feed end of the mills are equipped with scoop feeders, which take the rejects from the classifiers. All of the scoops need attention and relining on all of the mill.

The No. 1 mill has a steel scoop box, which appears to be in good condition. Mills Nos. 2, 3, and 4 have wood scoop boxes, which should be replaced by steel scoop boxes. No. 1 mill is 8 x 6, the Nos. 2 and 3 mills are 7 x 5, and the No. 4 mill is 7 x 7.

The No. 1 mill is driven by a 250 h.p. synchronous motor 2200 volts. The other mills are driven by 200 h.p. induction motors. The trunnions are in good condition. The gears and couplings are in good condition. The motors are in good condition.

We inspected No. 1 mill and found that the breast liners were worn and should be replaced in the near future. The feed and discharge liners were in good condition. We found some spare liners for the mills. The discharge from the mills flow through a launder into Dorr classifiers.

Before starting any of the mills, they should be cleaned out and inspected. The ball charges should be checked and all bearings should be thoroughly gone over and the motors should be cleaned. The couplings should be repacked with grease and the shafts checked for alignment.

The discharge from the mills is transported to Dorr Rake Classifiers through launders. The rejects from the classifiers are laundered to the scoop box of the mill. The fines from the classifiers flow by gravity through pipe lines to the flotation system. The classifiers appear to be in fair condition. Some of the rakes should be replaced. The plates for these rakes are on hand. The cases should be thoroughly cleaned and the gearing and bearings should be inspected.

There are several replacement parts on hand for the classifiers.

## FLOTATION

The flotation system should be thoroughly cleaned and inspected before starting up. The battery of electric flotation cells appear to be in very good condition, but the motors and machinery should be thoroughly inspected before operation starts.

The flotation concentrates are fed to an Oliver Drum filter which appears to be in good condition. The canvass was fairly new before the plant shut-down, but during the period of idleness the wire wrapping that holds the canvass in place has rusted to a considerable extent and may need replacing. There is sufficient wrapping wire at the filter for one replacement.

## TRAM

The concentrates from the filter are dumped into bins, which in turn dump into the tramway buckets. The gates are rack and pinion type. A thorough inspection of the machinery and equipment for the tramway should be made before operations are started. Some of the cables may need replacing, and the cable should be greased. The towers should be thoroughly inspected before a heavy load is imposed upon them.

The tramway is now operated periodically for transporting mail and small supplies to the camp. The tramway is about nine miles long, and the travel time is about one hour and fifty minutes one way. The machinery seems to be in good operation.

## AIR COMPRESSORS

The inspection of the mining equipment above ground revealed that there were four Ingersoll-Rand air compressors about 3,000 cubic feet capacity. This capacity is installed near the portal of the mine. We were told that there is another compressor house with a capacity of about 1,500 cubic feet. The compressors which we saw seem to be in good condition, but should be thoroughly inspected before starting up.

Three of these compressors are belt drive and are of the Corlas Valve type. The other compressor is of the Poppet Valve type with synchronous motor mounted on the main shaft.

The air receivers are on the outside of the building, and should be inspected and tested before a pressure is applied.

### PNEUMATIC TOOLS

There are twenty-one Ingersoll-Rand drifters with hand screw feed, complete with mounting attachments. Automatic feed can be installed on these drifters. There are no hose connections or water lines. There are eighteen stopers with automatic air feed, Gardner-Denver Model, 11S-1A. There are five jack hammers and about fifteen paving breakers. Sufficient column bars and mountings are on hand for the above mentioned tools, but are now under a snow pile and could not be inspected. All of the air hose has been removed from the camp and no hose is available at the camp for operating any of the pneumatic machinery.

The inspection of the warehouse showed that there was quite a number of repair parts on hand for the drilling equipment. It also revealed that there is sufficient stock of steel to start operations. Both round and square steel is on hand.

### ROLLING STOCK

There are several mine cars which can be operated with a small amount of work being done on them. Several repair parts are on hand. Steel plate will be required, however, for repairing the boxes of the cars. The mine locomotives are now operating, but should be inspected by the operating crew so they will be acquainted with their condition before starting operations.

### LUMBER

There is a large quantity of timber in the lumber yard, enough for one year's operation.

### RESERVOIR

The high pressure water reservoir was not inspected, but our guide informed us that it needs a new cover.

### GASOLINE SHOVEL

There is a link belt gasoline engine driven shovel. The cable is in good condition. The tracks, sprockets, rollers, etc., are in good condition. The swing gear is in fair condition. The radiator may leak, but can be repaired easily. This shovel has not run for about  $1\frac{1}{2}$  years and in that time the pet-cocks have been closed. This indicates that the motor should be started with caution.

There is a 50' boom and drag line at the camp. There is a Cleatrack, No. 40 caterpillar tractor. The caterpillar is equipped with a Gar Wood hoist and dozer. This piece of equipment is in good condition and ready for operation.

#### BOILER HOUSE

The boiler house is used to generate steam for heating the mill building, the machine shop, and the hospital. It has two Scotch marine boilers with brick setting. One boiler is oil burning and the other is scrap wood burning. There are no feed pumps or injectors for these boilers. The boiler feed is made up from the camp water supply pressure.

#### FRAMING SHOP

The framing shop is complete with all tools necessary for mine operation. The machinery seems to be in excellent condition, and probably could be started up with a minimum of work.

#### MACHINE SHOP

The machine shop is completely equipped with machinery sufficient to maintain all equipment that is on the job. There are no electric welders on the job, but there is a considerable stock of welding rod.

#### BLACKSMITH SHOP

The blacksmith shop is equipped with all the necessary hammers and tools for doing general blacksmithing. When the mine was in operation, detachable bits had been used for drilling. Equipment for sharpening these bits has been removed from the plant and new equipment will be required to start operations. However, there is on hand an Ingersoll-Rand sharpener for shanking and threading the steel for the detachable bits. Heat treating and tempering forges and equipment are on hand for the steel sharpener.

It appeared that there is sufficient pipe and fittings on hand to start operations. Some pipe has been removed from the mine and can be reused. There is a considerable stock of new pipe and fittings in the warehouse. The extent of this inventory can be determined later.

To start milling operations, we believe, that a crew of about seventy-five skilled mill mechanics, electricians, machinists, etc., will be required. About thirty days will be required to put the mill into operating condition. During this time another crew of men will be required to put the mine into operating condition and dewatering.

MESS HALL

It was found that the building needs complete renovating before it can be used as a mess hall again. There are seven, ten man, tables which can be used. The range is still in the kitchen, but it is in very poor condition and we doubt if it can be repaired satisfactorily.

PRELIMINARY STUDY  
OF  
PRODUCTION RECORDS  
AND  
ORE RESERVES

On Friday, December 4, 1942 Mr. Geisendorfer conducted Mr. Knight, Major Rogers, Mr. Locke and Mr. Hurt through the 700 level, the principal opening and haulage level of the mine. Several sublevels, stopes, crosscuts and hoist stations were inspected as well as many of the geologic features.

Messrs. Locke, Geisendorfer and Hurt completed their study of the mine reports, maps, mill records and other data on December 6, 1942 and returned to Oakland.

The following section of this report by Mr. Locke and Mr. Geisendorfer analyzes the possibility of reopening the mine. Included are production records of the mine, estimates of tonnage and grade of ore available and an estimate of the cost of producing copper under the present conditions.

SUMMARY OF CONCLUSIONS

The estimate of the Mine Superintendent (Exhibit II), of 500 tons daily for two years, seems to us reasonable. Moreover, we believe that, with good luck in the recovery of the now flooded workings below the tunnel level, and in the mining of ore which might be recovered in a big block left above the tunnel in the middle of the mine, this figure could be increased.

At 500 tons per day safe cost of ore to the mill bin is \$4.00 per ton.

By Augustus Locke

By H. P. Geisendorfer

## HISTORY

The history is shown in the exhibits, plates and tables. Following are additional notes.

Ownership during principal production: 50.4%, International Smelting and Refining Co., balance, scattered. The concentrates have been smelted by the controlling owners.

Dividends paid total some \$275,000, and the company now owes its controlling owners \$655,000.

The Walker vein outcrops for a mile or more in a north-northwest line and is covered at either end by lava. It has developed a succession of 4 large chalcopyrite orebodies along a steeply east-dipping shear zone for a length of 7,000 feet; and, 1,000 feet farther, under the lava, another orebody which has not yet been proved to be large. The orebodies from south to north are: South, Central, North, 712, Piute, and North Piute. The wall rocks are sediments metamorphosed to hard Robinson schist which has flat, southwest-dipping layers which correspond, at least in part, to the original beds. The Central orebody above the 7th or Tunnel level was the richest, having contained originally about a million tons of 4% copper ore. The North orebody was large and low grade but became richer downward. The 712 was much smaller, low grade on the fringes, and contained many high grade stopes. The Piute was very large, low grade and much flatter than the others; its stoping width averaged 40 feet. All the orebodies plunge down the east-dipping shear zone below the levels reached by mining. The vertical developed depth in these orebodies varies between 700 and 500 feet *below tunnel level*.  
**BELOW MAIN HAULAGE LEVEL - ABOVE THIS LEVEL <sup>750</sup> IT IS MINED TO SURFACE**

Through 1925, the Central orebody above the Tunnel was the principal producer. The North orebody by that time had been reached but little mined. Since then, development has gone down to a 10th level 500 feet deeper than the Tunnel level, and, under the Central and North orebodies, to a 12th level 750 feet deeper than the Tunnel. Development has also gone northward. In the later 1920's, although nothing was found to equal the rich Central orebody, increased tonnage output and good market kept the mine in a good position. Beginning 1931, the bad market, and later, man-power deficiencies all but killed it off.

After two shutdowns, the owners reopened the mine in 1939 in the expectation of a better market and of good results from a campaign of diamond drilling. Neither expectation was realized, and the International Company had to put money in from 1939 to 1941. In October of the latter year, the mine was again closed, not for lack of ore but because, with the low grade ore available, the operation was unprofitable at 12¢. The mine is flooded in the Piute to the Tunnel level, and to the south of the Piute to the 8th level, 150 feet deeper, where it must find an outlet. The big pumps have been taken away from the property. The Piute hoist is in condition.

X *now full to tunnel level*  
1947

AVAILABLE ORE

See Plate I, Exhibit I, Exhibit II, and Table III.

Exhibit II is the closing report by Mr. W. T. Warren, Jr., the Mine Superintendent, discussing further operation. It contemplates:-

- (1) Two years' operation;
- (2) 500 tons of ore daily, or between  $3\frac{1}{2}$  and 4 million pounds of copper yearly;
- (3) On a cost-plus basis.

These conclusions were based: (1) on good figures of tonnage and grade; and (2) the experience and judgment of Mr. Warren.

Mr. Warren, a recent graduate of Stanford, was associated with the operation in the intervals when it was running from about 1935 to the end, as Safety Engineer and, finally, as Mine Superintendent. He was enthusiastic and energetic, and, though not a seasoned old hand, would be expected to get his ideas into the right shape on the ability of the mine to produce competitively.

It should be realized, however, that when this report was written, he and all his companions were acting under orders to retreat, and that they had no occasion to experiment with cost-plus operation. The closing ore reserve estimate (Table III) shows in the blocked, probable, and possible classes  $3\frac{1}{4}$  million tons gross, and 1 million tons recoverable averaging 1.37% copper, 0.76 oz. silver, and 0.035 oz. gold. It might be expected that cost-plus operation could make a bigger proportion of the gross available, though there is no present way of telling how much.

COST OF ORE TO MILL BIN

(H. A. Geisendorfer)

With pumping in Piute end only (350 to 400 gallons per minute) and with output of 500 tons per day, a \$3.50 cost to the mill bin is the best that could be hoped for under favoring conditions. But there will be grief from caving and handling wet sticky ore in the now-flooded Piute and North Piute, and some leeway is therefore necessary. \$4.00 to the mill bin is as good a cost as can now be counted on at 500 tons per day.

FUTURE DEVELOPMENT POSSIBILITIES

(H. A. Geisendorfer)

Short Range

Develop the block above the Tunnel between the North orebody and the 712, 800 feet long and 1,000 feet high. This is very promising.

Prospect this same area below the Tunnel. The mineral shear zone is only a few feet in the hanging wall from the Tunnel.

Prospect the area under the 712 orebody. This can be done by raising from the 10th level.

Drive the 10th level under the North Piute orebody discovered on the 9th level; and prospect the country to the north of this orebody either by extending this level or by diamond drilling from the surface.

Long Range

On the Tunnel or 7th level, <sup>DRIVE</sup> a cross cut east (into the hanging wall) 400 or 500 feet, or a distance to be determined for deep diamond drilling 1,000 to 1,500 feet. This I would do opposite the central part of the North orebody and opposite the central part of the Central orebody. Ores of the North orebody are much higher in grade below the Tunnel level than they were above, but in both these orebodies on and above the 10th level they are much more broken up and harder to mine clean than they were above the Tunnel level. DUE TO PARALLEL AND ADJACENT FAULTS, OFTEN CUTTING THE VEIN ON 10TH LEVEL

Reason: On the Tunnel level, paralleling the vein only a short distance in the hanging wall and dipping a little steeper than the vein, is a heavy fault. On the 10th level this fault is in contact with the vein and in places has entirely cut it off. I believe this fault to be largely post-mineral, a normal fault with a considerable throw. I believe deep drilling will show the vein on the hanging wall side of this fault and, away from its influence, probably richer in mineral and more easily mined. Some rich ore was found east of the fault on the 10th level, and I believe also on the 12th level, under the North Orebody.

Conclusion: If such drilling picks up the vein as anticipated, a larger mine can be expected at depth than has already been mined.

To mine this deep ore and open up levels 2,000 feet below the Tunnel level, a 4-mile crosscut tunnel has been projected from a point near Genesee. This tunnel would drain large volumes of water, prospect promising, parallel structures, and be used as a haulage tunnel. The portal would be near 4,000 foot altitude, and be easily accessible the year around. It would be easily accessible to rail facilities near by, or a low level rail connection could be built to the works at the portal. A fertile valley nearby could be used for housing, and for small farms for employees.

#### MINERALIZATION IN THE WALKER MINE SHEAR ZONE AND IN THE ROBONSON SCHIST .

THE WALKER MINE SHEAR ZONE IS A WIDE BELT OF FRACTURING IN THE ROBONSON SCHIST TRENDING ABOUT N.20 W. IT WAS DEVELOPED FOR A DISTANCE OF  $1\frac{1}{2}$  MILES, AND PRODUCED MORE THAN FIVE MILLION TONS OF ORE. THE FRACTURES HAVE BEEN FILLED WITH QUARTZ CARRYING VALUES IN COPPER AS CHALCOPYRITE AND SOME GOLD AND SILVER. MINERALIZATION HAS OCCURED IN TWO STAGES, FIRST THE QUARTZ CARRYING ABOUT ONE PER CENT COPPER, 1 OZ. SILVER, AND .05 OZ. GOLD. THIS BRITTLE QUARTZ FILLING WAS THEN SUBJECTED TO CROSS FRACTURING ALONG N.E. FISSURING INTRODUCING COPPER ONLY AS CHALCOPYRITE, WHICH RESULTED IN THE RICH ORE BODIES. MUCH OF THE STOPING WAS 30 FEET WIDE OR MORE, AND OCCASIONALLY AS MUCH AS 80 FEET.

THE SCHIST CARRIED CHALCOPYRITE MINERALIZATION TO A GREATER OR LESS DEGREE EVEN FOR GREAT DISTANCES FROM THE SHEAR ZONE. MANY DRIFTS AND CROSSCUTS WERE DRIVEN IN THIS WALL ROCK AND SAMPLED ON 5 FOOT INTERVALS ASSAYING FROM 0.20 TO 0.80 COPPER, AND LARGE AREAS NEAR THE SHEAR ZONE AVERAGED 0.80% COPPER.

THE SCHIST IS CUT OFF BY GRANITE ON THE SOUTH AND A DIAMOND DRILL HOLE WEST IN THE NORTH OREBODY ENTERED GRANITE AT 600 FEET, AND TO THE NORTH OF ANY WORKINGS GRANITE OUTCROPS TO THE WEST OF THE SCHIST. THE SCHIST GOES DEEP, EXPOSED ON CLOVER CREEK AT MORE THAN 2000 FEET BELOW WALKER MAIN WORKINGS, AND CARRYING CONSIDERABLE BORNITE.

A 20 FOOT CROSS DYKE OF BASIC ROCK RESEMBLING THE SCHIST IN THE SOUTH OREBODY WAS ENTIRELY BARREN OF MINERALIZATION. IT CUT THE SHEAR ZONE AT NEAR RIGHT ANGLE, BUT THERE WAS NO DISPLACEMENT OF THE VEIN. THE DYKE HAS A SLIGHT SELVAGE ON EACH WALL.

I AM STRESSING THE MINERALIZED CHARACTER OF THE WALL ROCK FOR FUTURE REFERENCE IN CASE THE COUNTRY MUST GO TO A MUCH LOWER GRADE ORE IN A FUTURE EMERGENCY, ESPECIALLY IF TAKEN IN CONNECTION WITH REMAINING ORE BODIES.

BERKELEY, CALIFORNIA 3/18, 1954,

H.A. GEISENDORFER

## CONCLUSIONS

by Augustus Locke

My work entitles me to no original opinion about either unexplored blocks, depth, or north extensions.

Evidently the geologists who worked here concluded that the mine would not improve with depth. In other words, they must have believed that the ore was affected primarily by the fault and not merely displaced by it later. The principal unexplored block, between the North and 712 orebodies, must likewise have been avoided for reasons which were considered good; for it has obvious attractions including some ore on its lower edge and barite and other mineralization at the surface 1,000 feet above. I suggest that anyone thinking of going after this block, or of going down after deep ore, first take a good look at the evidence and reasoning used by the geologists.

The mine is now at a low ebb, and any arrangements for exploration ought to be made on that basis. In other words, after many years with plenty of work, including diamond drill holes, to get extensions and parallel veins, it would be folly to think of this as anything but a very serious undertaking, with unquestionable risks of failure. Nevertheless, it is good practice, within bounds, to keep on trying experiments in the vicinity of good orebodies. I suggest, for example, the following:-

(1) A complete account of the reasons why certain parts had little exploration, including the part under the bottom levels.

(2) An attempt to put together the rock structure-pattern, with the idea that the rich ore might correlate with unique features which could be projected into unexplored ground. Relation of ore to given layers of the schist is an example. The geologists have already worked on this subject, but we found no record of it at the mine.

(3) In this kind of ground, with faults braided into the vein, it has often proved very difficult to get a sharp answer, even from such a thorough study as was made by the geologists here. Unless, therefore, the preliminary picture should prove clearly and strongly adverse, I should favor the kind of work which Mr. Geisendorfer suggests, if it could be done under easy conditions of terms, costs, etc. This would be a good depression job.

EXHIBIT I

WALKER MINING COMPANY

MANAGER'S REPORT - 1941

Mr. J. R. Walker, President  
Walker Mining Company  
818 Kearns Building  
Salt Lake City, Utah

Dear Sir:

The following is the annual report of operations for the Walker Mining Company, covering the ten month period, beginning January 1, 1941 and ending November 1, 1941. Also, combined with this report is the closing summary.

MINING DEPARTMENT

Tonnages of Ore Mined and Produced (DRY)

<u>Orebody</u>	<u>Ore Broken</u>	<u>% Cu</u>	<u>Ore Produced</u>	<u>% Cu</u>	<u>Waste Broken</u>	<u>Waste Produced</u>
South	1,307	2.24	7,465	1.18		
Central	24,163	2.02	27,712	1.75	65	
North	86,727	1.30	112,957	1.26	322	
712	54,447	1.37	50,987	1.33	7,113	
Piute	81,845	1.34	83,127	1.37	7,744	
North Piute	8,297	1.17	8,280	1.22		
TOTAL	256,786	1.40	290,528	1.35	15,244	
			0.67 Oz. Ag.		0.66 Oz. Ag.	
			0.042 Oz. Au.		0.042 Oz. Au.	

Summary of Heading Progress for Mining

<u>Headings</u>	<u>Orebodies</u>					<u>Total</u>	
	<u>South</u>	<u>Central</u>	<u>North</u>	<u>712</u>	<u>Piute</u>		<u>No. Piute</u>
Large Size Drifts			163	71	214		448
Large Size Crosscuts			79				79
Small Size Drifts				277	43		320
Small Size Crosscuts				4			4
Small Size Stope Drifts					19		19
Three Compartment Raises						43	43
Two Compartment Raises				188		22	210
Large Size Chute Raises			82		689		771
Small Size Chute Raises				48	91		139
Small Size Stope Raises				132			132
TOTAL			324	720	1,056	65	2,165

Mr. J. R. Walker, Sheet 2.

Summary of Heading Progress for Development

<u>Heading</u>	<u>Orebodies</u>						<u>Total</u>
	<u>South</u>	<u>Central</u>	<u>North</u>	<u>712</u>	<u>Piute</u>	<u>No. Piute</u>	
Large Size Drifts			145	452	1,200	458	2,255
Large Size Crosscuts			32	45	136	180	393
Small Size Drifts				786	81	80	947
Small Size Crosscuts				263	210	188	661
Three Compartment Raises				20		30	50
Two Compartment Raises				269	35	53	357
Large Size Chute Raises					25		25
Small Size Manway Raises				91	6		97
<b>TOTAL</b>			177	1,926	1,693	989	4,785
<b>GRAND TOTAL - MINING &amp; DEVELOPMENT</b>			<u>501</u>	<u>2,646</u>	<u>2,749</u>	<u>1,054</u>	<u>6,950</u>

Summary of Diamond Drilling Development

<u>Orebody</u>	<u>No. of Holes</u>	<u>Total Footage</u>	<u>Remarks</u>
North	4	218	Developed no ore.
712	7	1,087	Developed no ore.
Piute	17	1,558	Thirteen holes of 1,313 feet total length failed to develop any ore. Four holes of 245' total length helped block out 1,300 tons of assured ore and 5,000 tons of probable ore.
No. Piute	9	831	Four holes of 302 feet total length failed to develop any ore. Five holes of 529' total length helped block out 13,500 tons of assured ore and 20,600 tons of possible ore.
Surface	<u>1</u>	<u>313</u>	Developed no ore.
<b>TOTAL</b>	<b>38</b>	<b>4,007</b>	

DIAMOND DRILL MINING

Breakage from Diamond Drill blasting amounted to 50,851 tons, at 1.37% Cu. and was carried out in 420B, 630, 640-740, 830, 920-920A Blocks of the North Orebody, 705B Block of the 712 Orebody, and 845A, 855B Blocks of the Piute Orebody. The total footage of drilling required for this breakage amounted to 23,880 feet, making an average of 2.13 tons per foot of hole.

This brings the total tonnage broken by this method to 161,405 tons and the total drill footage to 61,167 feet, thus averaging 2.64 tons per foot of hole.

At the time operations were suspended, the Level Pillars between 420B and 310A Stopes were being recovered by this method and upon completion would have finished the Diamond Drill mining program.

Mr. J. R. Walker, Sheet 3.

SUMMARY OF MINING

SOUTH OREBODY

No development work was done in this Orebody and mining was confined to the recovery of 750A Pillars.

Breakage and Production figures for the Orebody are as follows:

	<u>Breakage</u>			<u>Production</u>	
	<u>Tons</u>	<u>% Cu</u>	<u>Waste</u>	<u>Tons</u>	<u>% Cu</u>
Stopes	<u>1,307</u>	<u>2.24</u>		<u>7,465</u>	<u>1.18</u>
Total	<u>1,307</u>	<u>2.24</u>		<u>7,465</u>	<u>1.18</u>

There was no additional ore developed in this Orebody and the recoverable amount was reduced from 160,000 tons at 1.33% Cu., to 155,400 tons at 1.31% Cu., through mining and transferring to non-recoverable pillars. There is no broken ore remaining in the Stopes.

CENTRAL OREBODY

No development work was done in this Orebody and mining was limited to 880B and 1080C Stopes.

Breakage and Production figures for the Orebody are as follows:

	<u>Breakage</u>			<u>Production</u>	
	<u>Tons</u>	<u>% Cu</u>	<u>Waste</u>	<u>Tons</u>	<u>% Cu</u>
Stopes	<u>24,163</u>	<u>2.02</u>	<u>65</u>	<u>27,712</u>	<u>1.75</u>
Total	<u>24,163</u>	<u>2.02</u>	<u>65</u>	<u>27,712</u>	<u>1.75</u>

The recoverable ore reserve was reduced from 85,900 tons at 2.01% Cu., to 69,900 tons at 1.99% Cu., through mining and caving. There is no broken ore remaining in the Stopes.

NORTH OREBODY

Development work in the Orebody was confined to extending 1201DN and driving two short crosscuts, 1211xcE and 1212xcE, into the hanging wall on the 1200 Level. What probable ore was developed, proved to be badly faulted and would present a number of difficulties in order to extract.

937CxeW, 938CDN, and 938CDS, were driven in order to prepare 920-920A Pillars for recovery by Diamond Drilling.

973ADN, and 877ARs provided a slusherway and ventilation to facilitate the mining of 840C Stopes.

Mr. J. R. Walker, Sheet 4.

NORTH OREBODY (Continued)

Breakage was carried out in 420B Stope, 420B Pillars, 620B Stope, 630 Pillars, 640-740 Pillars, 740-760 Pillars, 830 Stope, 840A Stope, 840C Stope, 920-920A Pillars, 920B Stope, and 940A Stope. Diamond Drill Blast work accounted for 44,251 tons of the total breakage.

Breakage and Production figures for the Orebody are as follows:

	<u>Breakage</u>			<u>Production</u>	
	<u>Tons</u>	<u>% Cu</u>	<u>Waste</u>	<u>Tons</u>	<u>% Cu</u>
Headings	2,854	1.02	322	2,854	1.01
Sideswipes	343	0.75		343	1.01
Stopes	83,530	1.32		109,760	1.26
Total	86,727	1.31	322	112,957	1.26

The recoverable ore was reduced from 228,700 tons at 1.30% Cu. to 151,400 tons at 1.25% Cu., through mining and writing off of caved areas. There are 2,450 tons of 1.33% Cu. ore remaining in the Stopes.

Diamond Drilling was confined to short holes into the footwall and hanging wall on the 1200 Level North. These holes consisted of Nos. 76, 77, 78, and 79, and did not locate any ore.

712 OREBODY

Exploration work was done principally to develop the footwall vein and prepare the various blocks for mining. 315C, 317C, 319C, 322C, 323C, 324C, 325C, 329C, 330C, 331C, and 332C, are headings driven to connect, open up and develop the 300 Level and prepare 317 Block for stoping.

406D, 407D, and 408D are headings driven to explore the extent of the vein above 517D Block.

591B and 592B were driven from 517BDS, which is the main footwall drift heading south, to prospect for the vein.

593B was driven to explore the upward extension of the vein and prepare 517D Block for stoping.

595B, 596B, 597B, and 598B, are headings driven to open up and prepare 517C Block for stoping.

622F were crosscuts driven to explore the footwall vein in 617D Block and 616F was a raise driven to prepare 617D Block for stoping.

623F and 624F are headings driven to prepare 617C Block for stoping.

678EsDN and 679EsDN were driven to explore the footwall vein on the sub-level.

Mr. J. R. Walker, Sheet 5.

712 OREBODY (Continued)

711E is the main footwall drift exploring north along the footwall vein and also 723E, which took off from 711E.

713E, 720E, and 722E, are raises driven to provide ore passes for 617D, 617C, and 617A Blocks respectively.

716E is a raise driven to prepare 705E Block for stoping.

735C is a drift driven to prepare 705A Block for stoping.

1017 is the main level heading being driven to connect with the Piute Orebody and 1076B is a crosscut from this heading to provide a drill station.

1085B was driven from 1077B to prospect for the southward extension of the Piute mineralization; and 1087B and 1088B are development headings driven from this drift.

There was also ore broken in 405E, 417B, 517C, 605E, 617C, 617D, 705A, 705E, Stopes, and 705B Pillars.

Breakage and Production figures for the Orebody are as follows:

	Breakage			Production	
	Tons	% Cu	Waste	Tons	% Cu
Headings	6,664	1.17	6,247	6,664	1.27
Sideswipes	1,332	1.33	527	1,532	1.64
Stopes	<u>46,251</u>	<u>1.40</u>	<u>339</u>	<u>42,791</u>	<u>1.33</u>
Total	<u>54,447</u>	<u>1.37</u>	<u>7,113</u>	<u>50,987</u>	<u>1.33</u>

Diamond Drilling consisted of seven holes and none of them developed any ore. Holes Nos. 91 and 92 were drilled 61 feet and 69 feet respectively, for distances from the 600 Level to prospect the footwall vein and they proved to be an absolute blank. Hole No. 82 was drilled 74 feet from 711EDN to prospect the footwall vein and yielded no ore. Hole Nos. 74, 75, 102, and 102A, were drilled 260 ft. 332 ft., 260 ft. and 31 ft. respectively from the 1000 Level to prospect the southward extension of the Piute Orebody. Some mineralization in these holes, but nothing to call ore.

Recoverable ore reserves were reduced from 254,100 tons at 1.48% Cu., to 229,900 tons at 1.50% Cu. Although 25,728 tons of additional recoverable ore were developed, the decrease is due mainly to extraction. 3,000 tons of 1.22% Cu. ore remain broken in the stopes.

PIUTE OREBODY

Development work in Piute was confined to the 900 Level South and from 1017DN, which was being driven from 706AW to connect with the Piute Orebody.

878ADS is a drift driven to service 845C Block.

Mr. J. R. Walker, Sheet 6.

PIUTE OREBODY (Continued)

903BDS is the main level heading driven to prospect the southward extension of the ore, and 843C and 944 C were crosscuts driven from this drift to prospect the footwall and hanging wall. Narrow high grade veins separated by bands of waste, were encountered in this development work and the face of the heading still was showing these narrow veins at the time operations were suspended. Two narrow stopes, 946A and 946B, were extended up on these veins from 903B, and in the case of 946B, the veins appeared to be pinching out about 35 ft. up the dip (31 deg.). 928C, 929C, 930C, and 931C, were flat raises with herringbone connections driven from the 900 to the 800 Level, to prepare 945 and 955 Blocks for stoping. These raises and subsequent stoping, showed the vein to consist of bands of ore separated by bands of waste, instead of being solid as had at first been thought.

941C is a raise driven from the 900 ore pocket to facilitate the production of 915 Block directly into the pocket; and 946C were drifts driven from the raise to serve as slusher ways.

949C is a drift driven from 903BDS to open up the footwall vein in 946A Stope.

1017DN is the main 1000 Level heading, driven to prospect the downward extension of the Orebody and to connect with the shaft. 1077B, 1078B, 1079B, 1080B, 1082B, 1084B, 1089B, and 1090B, were development headings from 1017DN, to prospect the 1000 Level. Of these, 1079BxcW was the only place to give promise of ore.

1083B were drifts driven from 1079BxcW to sill out and open up the vein, which averaged about 5 ft. in width.

1086B is a raise extended up the dip (31 deg.) on the ore and yielded some very good ore, being especially high in gold. The gold values averaging 0.14 oz. for the entire raise, which included waste broken with the ore. The vein pinched to less than one foot wide at a point 75 ft. up the dip.

1091B were drifts driven from 1086B at a sub-level elevation to prospect the extent of the vein. The south drift gave the best showing, averaging 0.600 oz. in gold, but at the time of suspension of operations, the ore in the face gave indications of spraying out.

Breakage was carried out in 845, 845A, 845C, 855A, 855B, 855C, 865, 915A, 915B, 915C, 945, 945A, 946A, 946B, and 955C Stopes.

Breakage and Production figures for the Orebody are as follows:

	Breakage			Production	
	Tons	% Cu	Waste	Tons	% Cu
Headings	10,015	1.34	7,272	10,015	1.39
Sideswipes	6,763	1.47	379	6,763	1.46
Stopes	65,067	1.33	93	66,349	1.36
Total	81,845	1.34	7,744	83,127	1.37

Mr. J. R. Walker, Sheet 7.

PIUTE OREBODY (Continued)

Diamond Drilling development consisted of 17 holes. 16 of these, Nos. 83 to 90 inclusive, 93, 94, 95, 98, 99, 104, and 105, being drilled from the 1000 Level, ranging in length from 25 to 226 feet. Only three of these, Nos. 85, 86, and 87 drilled from 1079BxcW, developed any ore. The other hole, No. 106, was drilled 75 feet from the 900 Level South and the first 15 ft. yielded fairly good assays.

Recoverable ore reserves were reduced from 508,200 tons to 320,800 tons, at 1.21% Cu. 17,378 tons of additional ore was developed, but the decrease is due to extraction, writing off of low grade marginal tonnages, and re-classifying tonnages in some blocks. There were 1,540 tons of 1.33% Cu. ore broken in the stopes.

NORTH PIUTE

All development work was confined to the 900 Level and 934-40C Block.

934C, 939C, and 947C, were the main level drifts driven to prospect the north and south extension of the ore. 950C and 952C were development crosscuts driven from 947CDS.

940C and 942C were raises driven to block out and prepare 934-40C Stope. 948C, 951C, 953C, and 954C, were development headings driven from these raises to open up and prepare this same Block. The commercial ore in this block lies in a zone varying from 5 to 30 feet wide on the hanging wall side, and the upward extension of the ore would probably stop at the 800 Level elevation or less.

The only Stope being mined in this Orebody is 934-40C Block.

The Breakage and Production figures for the Orebody are as follows:

	Breakage			Production	
	Tons	% Cu	Waste	Tons	% Cu
Headings	5,755	0.97		5,755	0.88
Sideswipes	1,208	1.62		1,208	1.82
Stopes	1,334	1.58		1,317	1.83
Total	8,297	1.17		8,280	1.22

Diamond Drill development consisted of one Surface Hole, No. 57, which was completed at 1028 feet and yielded some mineralization but no ore, and 9 holes underground, ranging from 60 to 149 feet in length. Of these holes, Nos. 80, 81, 100, and 103 developed no ore. Nos. 96, 97, and 101 helped develop the ore in 934-40C Block, and Nos. 107 and 108 showed about 5 feet of good ore as well as scattered mineralization below the 900 Level.

Recoverable ore reserves were reduced from 105,000 tons to 55,200 tons of 1.70% Cu. 1,858 tons of additional recoverable ore was developed and the decrease is due to extraction, writing off of some low grade tonnage, and re-classifying of other tonnages. The broken ore in stopes amounted to 17 tons of 2.30 Cu.

Mr. J. R. Walker, Sheet 8

#### MINING CLAIMS

The assessment work on the Copper King Group of seven claims was started on June 27, 1941 and completed on August 5, 1941. The main tunnel was extended 30 feet, at a total cost of \$696.41.

A new group of seven claims, known as Add Nos. 1 to 6 and Add Extension were located on July 11, 1941, to cover any possible extension of the Piute Orebody.

Discovery pits were dug on each of these seven claims from July 17th to July 31, 1941.

#### MINE OPERATING IMPROVEMENTS

During the past year, the mine operating improvements were kept to a minimum, owing to the uncertainty of future operations. The following work which was necessary for continued operations was completed.

1. Piute 700 Station re-timbered and that portion of the shaft between the 700 Station and the sub-level. Also some extensive re-timbering of the Piute Shaft between the 900 and 1000 Levels.
2. 784 Pump Station was entirely re-built. The pumps here were on timber over the sump. This timber had rotted to such an extent, that it was no longer safe. As it was necessary to entirely re-construct the old station, an entirely new arrangement of pump setting was decided on, which made for better operating and greatly reduced the number of pipe fittings. This resulted in a marked increase of pump capacity and reduction in pumping time.
3. Four of the main tunnel cars were taken apart and put on the 1000-706 haulage. For their operation there, it was necessary to do a very limited amount of work, such as re-modeling chute lips and changing some timber. This operated very satisfactorily in reducing the number of men on the haulage crew and increasing tonnage.

#### PRECIPITATES

Recovery of copper from mine water was conducted during the spring months. The cleanup resulting in the following:

Precipitates produced, dry tons	20.201
Grade, % Copper	67.3
Ounces Silver per ton	0.25
Ounces Gold per ton	0.005

#### MILL

Operations of the Mill for the year are summarized as follows:

Ore milled, dry tons	291,438.00
Grade, % Copper	1.350

MILL (Continued)

Ounces Silver per ton	0.695
Ounces Gold per ton	0.050
Operating Days	258.08
Ore milled per day, dry tons	1,129.25
Ratio of Concentration	20.3816
Concentrate produced, dry tons	14,245.56
Grade, % Copper	25.197
Ounces Silver per ton	11.539
Ounces Gold per ton	0.7689
Lime Scale recovered, dry tons	53.49
Grade, % Copper	7.735
Ounces Silver per ton	9.226
Ounces Gold per ton	13.1887
Total Concentrate, including Lime Scale, dry tons	14,299.05
Grade, % Copper	25.132
Ounces Silver per ton	11.531
Ounces Gold per ton	0.8154
Recovery, Percent - Copper	91.33
Silver	81.36
Gold	79.30
Ball Mill Hours	18,002.5
Percent of Ball Mill hours in opera- tion	72.66
Dry tons per Ball Mill hour	16.19
Grind by Ball Mills - plus 48 mesh	4.66
- minus 200 mesh	45.22
Tailings Grade, % Copper	0.12
Ounces Silver per ton	0.111
Ounces Gold per ton	0.0117

## Reagent and grinding ball data:

	<u>Pounds Per Ton</u>	<u>Cost</u>
Lime	0.521	\$0.0056
Pine Oil	0.105	0.0071
Xanthate Z3	0.082	0.0110
Xanthate Z5	0.041	0.0111
Sodium Sulphide	0.0075	0.0004
Total	0.7567	\$0.0352
Grinding Balls - 3", 4", and 5"	2.475	\$0.0856

MILL (Continued)

Mill Notes:

Symons One shaft and head ruptured, necessitating purchase of new unit.

Ball Mills Re-set No. 3 Reduction Unit.  
Replaced one set of bearings in No. 4 Reduction Unit.  
No. 2 Shell cracked and welded, finally broke again, and a new half shell was installed.  
No. 3 Shell started to separate at middle flange joint. Shell re-set and new flange bolts installed.

Flotation A further change made in treatment of middlings. The 50 ft. Dorr thickener was cut into the middling circuit to thicken the middlings before pumping back to Ball Mill circuit.

Filter One third of the vacuum pipe on the Oliver Filter was replaced.

Tailing Pond - One Break in tailings dike occurred in March, necessitating a sand bag patch in the dike. No serious loss of tailings resulted.

On account of the Mine closing October 24, 1941, the last ore was milled October 30, 1941, and cleanup of concentrate and lime scale continued until November 24, 1941.

GENERAL

During the year, it was realized that the ore reserves which could be mined at 12¢ copper, were rapidly becoming exhausted. Before the year was up, we would lose approximately the daily tonnage from the following places:

600 Tons from 706 Shaft  
300 Tons Diamond Drill rock from North Orebody Pillars above the tunnel.  
300 Tons from Piute 800 Level  
1,200 Tons Total

This would bring the daily production down from 1500 Tons per day, (the necessary tonnage for profitable operation), to around 300 Tons. Possibly an additional 175-200 Tons could be picked up from other parts of the Mine; but this would only mean a production of 475-500 Tons per day. This tonnage would come from numerous working places scattered all over the Mine and with the exception of some ore in 712, and 900 Piute; from places abandoned in the past as being unprofitable. Various estimates were made with the result that it was entirely out of the question to break even, even with a moderate increase in the price of copper.

However, last year development work opened up a very attractive body of ore on the South Piute 900. This was larger and of better grade than on the 800 above and if it continued to improve going down to the 1000, might very well re-place the stopes that were exhausted. In fact, with a continued improvement in grade, which the Geological Department believe very possible, the outlook for future operations would be very bright.

Mr. J. R. Walker, Sheet 11

GENERAL (Continued)

If the necessary development work had been done from the Piute Shaft, it would have had a serious effect on production, so 1017 from 706 Shaft was pushed to get in under the South 900 Piute.

In August of the present year, sufficient work had been done by drifting, crosscutting, and Diamond Drilling, to satisfy the management that the Piute — ore in all probability, did not extend down to the 1000 in sufficient size, to make a new mine. Nevertheless, in order to exhaust all possibilities, work was continued here until about the middle of September. From then on, work was confined to the small body of ore in 1086B. Here, as mentioned elsewhere in this report, a small showing of ore of much higher value than normal in gold was encountered. There was no chance of this developing into anything that would make a new mine, but if operations were to be continued under some form of a Government subsidy, it might well develop into something that would help out. Further development proved this body to be extremely irregular, with a bad hanging wall and hence difficult and expensive to mine, and only capable of producing a limited tonnage.

On October 24th, it was decided to cease operations and pull the pumps. Before the pumps were removed, all equipment and material that would pay to salvage was hoisted from below the tunnel level, and an eight foot, reinforced concrete bulkhead was built in 1017; so that the north end of this area could be operated from the Piute Shaft without pumping out 706. To make the connection from the 1000 Piute, would require 115 feet of drifting and 20 feet of raise.

During the last week of October and early part of November, all available material in Mill Bins, middling tanks, etc., was run through the Mill. The two concentrate thickeners were cleaned out and shipped. The Mill was then carefully gone through for Lime Scale and this material sacked and shipped. All equipment was gone over and left in shape for the shut down, and the same was done for the Mine equipment.

We were very pleased that this wind up work was done without an accident of any kind.

Respectfully submitted,

H. M. Hartmann  
Manager

HMH:dm

EXHIBIT II

WALKER MINING COMPANY

MINE SUPERINTENDENT'S CLOSING REPORT

The following report is a discussion of the Walker Mine proper in general, and available ore in particular. As an aid to studying this report, a complete set of longitudinal-vertical projection prints are included which should be followed during the reading. Discussion starts with the South Orebody, West Vein; then the South and Central Orebodies, etc., proceeding North through the Mine and ending with the North Orebody, Piute. Quite complete operating notes regarding the condition of raises, caved areas, ore passes, etc., have been marked on the prints and will be of some value to an operator.

SOUTH OREBODY - WEST VEIN

The only available ore in this section of the Mine is in the 775 N and S Stope Blocks. The engineer's reports show the available ore and values. The grade is as low as to make it uneconomical to mine at 12¢ copper. All broken ore was pulled out, but the condition of the area is amenable to further mining. As a suggestion, a suitable method would be the driving of sub levels (as shown) and the subsequent slotting and mining by diamond drills. This would not be too difficult to accomplish, although the block would be rather expensive to mine considering the grade of ore.

There is still some ore left below the 700 Level, but it is quite lean and presents many problems. First, the service winze (700aWz) is in poor shape for hoisting; it would need re-timbering from the 700 Level to the 900 Level. Secondly, the cost of dewatering and the cost of pump maintenance per ton of ore would be very high. Thirdly, all existing stopes are either caved or filled and any new blocks would have to be produced through the levels; levels are not in shape to handle ore, and the shaft pockets are merely "prospecting" pockets and not very good at that. The mining problem would be quite costly as there is a persistent hanging wall fault of great length which is located some 3 to 12 feet from the ore. The ground on either side of this fault is rotten and will not hold. Stopping within 6 feet usually brings in the fault, plus some eight to ten feet of waste. Of course, a cut and fill method, or a timber method of stopping could be used, but again the cost would be very high for the amount of ore and the grade.

SOUTH AND CENTRAL OREBODIES

The South Orebody area shown on this long section represents the hanging wall vein. The hanging wall vein has always been a higher grade than the footwall vein, but has been made up of stringers that have little width. Regarding the ground available below the 700 Level, the same facts hold true as mentioned under discussion of the "SOUTH OREBODY." Above the main level all blocks ex-

MINE SUPERINTENDENT'S CLOSING REPORT

Sheet 2

SOUTH AND CENTRAL OREBODIES (Continued)

cept two have been cut off by the granite, and have been mined completely. The two blocks left (really only one), are in the 750 A zone. 750A Stope proper was mined previous to 1937, but mined some 30 feet wide on a vein of about 6 feet. The stope finally caved to the hanging wall fault on the north end. As the south end was still open for an Ore pass, some development was done here above the 600 Level and the vein opened up. It is possible to mine this block, but at a high cost. The amount of work involved, plus the narrow width of the vein, plus the time and money to re-open service ways, decided us against mining this block. Production would be low, and the cost very high.

The Central Orebody above the 700 Level is essentially lost and not available. The main parts were caved some years ago, and since that time the majority of the pillars have been robbed. There are several small areas left above the 500 Level which, under some conditions, might be recovered; however, the amount of repair work necessary and the time involved to prepare the blocks, plus the hazard and the small tonnage, made it uneconomical for us to handle.

The Central Orebody below the 700 Level is mined out except for one small block - 880A. This block was not mined because it was not economical under existing conditions. It is directly below the main transformer rooms and almost directly under the 706 hoist; the ore pass to the main haulage level on the 1000 Level is blocked, due to 1080C Stope caving during drawing off. Blocks south of the shaft have been completely mined out and for the most part filled. These blocks presented a difficult mining problem, due to bad ground conditions, which was overcome by leaving frequent pillars, and dropping off areas that would have slowed up the breakage progress. Previous to 1937, a cut and fill method was tried on these blocks which was not successful, due to slow breakage and production as compared to shrinking and using plenty of pillars.

After completion of the 880 and 880B Blocks, these areas were used for waste disposal. The dump is very handy, and is still available for another years supply of waste.

Below the 1000 Level, no ore was found.

NORTH OREBODY

With the exception of two small blocks of ground, the North Orebody has been mined to completion. Above the 700 Level, there is a small block of ground left in 420B Stope that we were diamond drilling for breakage when the mine closed down. The work was proceeding by slotting, and will take about six weeks work to complete. On completion, the sill pillars for 310A Stope will be out, which will let down about 2,000 tons of broken rock that is in this stope. All other blocks above the 700 have been thoroughly gone over several times - the last time by diamond drilling all available pillars, which work completed the mining to the end point.

MINE SUPERINTENDENT'S CLOSING REPORT

Sheet 3

NORTH OREBODY (Continued)

On the 700 sill there is left the "740-760" pillar area. Work is about 1/3 completed here and the remaining ore is still available.

Work below the 700 Level was completed with the diamond drilling of available pillars and the subsequent caving of the largest stopes. The only real block of ground that we had here was that included in the 920 and 920A Stopes. This ground was mined completely - the minimum of sheet pillars were left, and the ore boundaries on the North and South were mined clean as far as ground conditions would allow. The area south of 797 Raise was mined mainly to keep up production while the 920 and 820 Blocks were being prepared. This ground was very broken up by foot end hanging wall faults and by numerous cross faults. We simply "grabbed" ahold wherever possible; mining the favorable ground as fast as we could, and then coming back and long holing the pillars to the end point. Shrinking the ground after first preparing it by a system of strike raises was the method used - and which adapted itself very well to our needs.

On the 1200 Level, mineral was picked up in considerable quantity below the 1020 and 1030 Blocks. The faulting, however, instead of being less intense, was much heavier and the mineral highly broken up and scattered, which automatically closed the ground to economical stoping.

As an operating note, it should be remembered that 794 Raise is in very poor shape due to dry rot. 706E Raise is in excellent shape and can be used as a service manway to the 400 Level. Notes on the prints indicate caving areas, serviceable manways, waste areas, etc.

712 OREBODY (FOOTWALL AREA)

The footwall area may be divided into four blocks. Each block has been completely blocked out and prepared for stoping above the 700 Level. Ore below the 700 Level appears very sketchy, and in fact below the 600 Level, it has been very disappointing. Extensive prospecting was carried out on the 1000 Level with small success. On the long section, the four areas have been laid out for observation, with operating plans for future work. By checking the assay and geological maps, information as to tons and grade may be had. Following is a discussion:

- 1) The 17D block was carefully prospected and laid out, and a shrink stope started. We had been somewhat apprehensive due to blocky ground conditions and fairly low grade ore. After carrying the stope up some 60 feet we found that fissuring was too heavy for us to hold protective pillars. Plans were made and show on the print, for cutting an intermediate level from which to proceed with shrinkage operations again. This was decided upon because of the excellent ore blocked out from the 500 Level to a point some 20 feet below the 400. Work was actually started when word

MINE SUPERINTENDENT'S CLOSING REPORT

Sheet 4

712 OREBODY (FOOTWALL AREA) (Continued)

of the shut down came. This plan can be carried to completion very nicely.

- 2) The 17C block is an excellent shrinkage area. The hard work has all been done and the ground prepared for fast stoping. Between the 600 and the 500 the ore was very spotty, and the ground a bit rotten. However, all of the good ore was extracted and work carried to the 517C Block. The grizzly level has been established, benches cut, etc., and the stope is now in good shape. The operating plan was to carry the block through to the 300 Level and establish another grizzly level, using 41ODRs as the main service above the 400. The ore on the south is being stoped by raise laterals, and on the north by a distinct waste dike. The ore grade is good from a point 40 feet below the 400, up through the 300, and the mining problem is simple.
- 3) The 17A block is well laid out and prepared for stoping above the 500 Level. At the time this work was done, we had planned to hand tram the ore from the 500. Prospecting on the sub level, at a later date (678EsDN), showed ore from the sub level to the 500. It was then decided to open up this ground before stoping above, in order to get a little fast breakage and also to provide a gravity ore pass direct through to the main haulage level and save the high cost of hand tramping. Work on the sub level has been completed, and work on driving the main haulage level in under the ore was almost completed (another 50 feet to go), when word of closing down came in. A separate layout sheet for this entire block is included in the prints, and shows plans for the transfer raise, location of the ore, etc. There is some 60,000 tons of a 1.88% copper in the block.
- 4) The 05E and 17B blocks are a bit more complicated than the others, and present a good many "ifs." 605E Stope is a grand stope, and can be continued without too much trouble. When word of closing was received, the stope was pulled dry, but only after a protective bulkhead was placed in the service raise. The plan for continuing this stope is through two slusher, sub-level drifts - from 613F Raise through to 696E Raise, cutting a slot through to 605E Stope, and then diamond drilling and breaking to the slot from both sides. The ground around 696E Raise is not any too good, and caution must be used when breaking gets close. On the satisfactory completion of the block, and providing the ore pass through 696E Raise is still intact, the pillars in 517B Stope may be mined.

The ground on the North side of this block is very much altered, and the ore is good grade only in spots. This makes selective mining without timber diffi-

712 OREBODY (FOOTWALL AREA) (Continued)

cult. The character of the ore is very "gummy," due to its altered condition and we found that in 517B Stope we could only produce 30% of the broken ore by gravity - the remainder packing tight in the ore passes, and having to be slushed to clean it out. We did slush out the ore, but the operation was too costly to try again.

The ore in this block above the 400 had to be square setted (405E Stope). It is quite good ore, but dangerous ground - which makes it expensive to break. 405E Stope was carried through to the 300 Level and silled off. At this point the ground is highly oxidized and so wet in the spring as to make it practically impossible to mine. The 417B block may, or may not be a good one. The plan was to carry it with square sets for about three floors in order to determine the character of the ground. If satisfactory at this point, we intended to carry it as a stull rill - dropping the ore to the 400 Level and slushing it over to the ore pass. This block of ore can be mined, but will be rather high cost - any may present more trouble than anticipated.

Under "operating notes," it should be remembered that this entire 712 area is very wet in the spring; in fact after a heavy winter, we have had to limit production to one chute because the others were impossible to load from due to water. Also, the upper levels are highly oxidized and it is doubtful if the Mill could handle much of this ore at a time. All pipe lines, track, etc., are in place and in good condition. Service raises and levels are all open and in excellent shape. The main trouble in this Orebody is that the grade is not too high, and the ore blocked out will not last very long. 712 is an excellent fill in orebody, for tonnage - but it has a very short life. The water for drilling has been furnished from the 200 Level at 794 - feeding into two concrete reservoirs on the 500 Level just off of the shaft. At this point we had two Worthington plunger pumps that forced the water through to the stopes. We had an auxiliary pump on the 400 Level to force the water to the 300 Level and above.

712 OREBODY - MAIN VEIN

In this case it is merely my personal opinion that the main vein of the 712 Orebody is mined to completion, with one exception. The exception is the ground as shown on the print around 709E Winze. This particular block was not touched as it was considered too high cost under existing conditions. This is correct, as the ore would have had to be slushed or trammed, and hoisted to be produced. Then again, there was about 30 to 50 gallons of water a minute to be handled out of the bottom (depending upon the season). The grade here is excellent, but the tonnage is small and pegged at about 50 feet down.

All other areas in this vein have been mined to completion some years ago, or have proven so low grade as to be impossible to mine on other than a cost plus basis. There are a few small stringers here and there (see geological maps), but I do not think that they would pay to mine under any conditions. Most of the country is caved, or filled. It is in poor condition; all mining except

MINE SUPERINTENDENT'S CLOSING REPORT  
Sheet 6

712 OREBODY - MAIN VEIN (Continued)

but I do not think that they would pay to mine under any conditions. Most of the country is caved, or filled. It is in poor condition; all mining except that above the 400 Level, 505 #2 Stope, and 605A Stope, was done previous to 1937.

PIUTE OREBODY

The Piute Orebody, except for six blocks, is completely mined out, and to the end point - that is to say, the orebody as we know it now. Above the 700 sub level, except for one zone, the ore has been mined to the end point and most of it has caved through to the surface. The 625 and 625A Blocks are still available for mining, but the ore is too oxidized to handle in the Mill. This block was stopped by Mr. Weed as unprofitable, in the fall of 1939.

The area between the 700 and the 700 sub level is too low grade to mine under existing conditions. The area from 845B Stope, north to 825B Stope has been completely mined out as far as safe mining is concerned. These stopes were first roughed out, then gone over once again and all pillars robbed that we deemed safe to take, and then gone over a third time and forced until they started to sluff. The pillars just above the 800 Level were not mined as they would have been unprofitable under existing conditions.

North of the shaft on the 900 Level, 915A Stope has been prepared, and was just starting to produce when the closing order came. This stope is not a profitable stope, but was being run to serve as a fill in for tonnage. All stopes north of 915A have been mined to the end point - the ground having taken weight, and deemed unsafe for slushing.

South of the shaft on the 900 Level there are four stopes available. They are 955C, 945, 945A, and 946A. These stopes are high cost stopes, as they are all coarse breakers and must be slushed. There is a good tonnage of available ore here, but the stopes do little better than break even because of the said high cost of production, and cost of maintenance of the Piute lower levels.

On the 1000 Level (from the 706 side) there is a small showing of good gold ore. This mineralized zone appears to be the downward extension of the 946A and B blocks. The character of the rock is very similar. Stoping through offers many problems that make for high cost. First of all, the distance to the 900 Level on the slope is 350 feet. Secondly, the hanging wall is quite slick, and very broken and blocky, which prevents any type of open stope and big breakage. Next, and probably the most important problem is that there is no continuous vein - but rather a group of "eschelon" streaks, which fade out as they go up, and as they go south. This "phenomenon" can be readily seen by closely checking the geological maps. All in all, the block is not large enough to make a new mine, or compact enough to give enough tonnage to pay for keeping the whole 1000 Level open.

MINE SUPERINTENDENT'S CLOSING REPORT

Sheet 7

PIUTE OREBODY (Continued)

Regarding operating notes here: The Piute shaft from the 700 sub to the 900 pocket is in very good shape except that new rails are needed for the muck skip tracks. From the 900 to the 1000 the North compartment, used as a spill pocket, needs all new dividers and about ten new end plates to put it in top shape. The shaft from the 700 sub to the surface is good enough for an air pass, but little else. The timber is in fair shape but is all out of line. It should all be re-lined and re-blocked. All stopes and working places active at the last are in excellent shape. Service raises, etc., are plainly marked on the long section.

NORTH PIUTE OREBODY

The North Piute Orebody consists of only a small block of ore. Examination of the Geological Maps for this Orebody will show the extent. We had started to lay out a sub-level caving block North of 940C Raise and were planning on starting South with a block in a couple of weeks. This whole area must be layed out carefully, and run strictly by assay values as the ore is very spotty, and sometimes the values are very deceiving to the eye. The footwall portion of the ore is highly oxidized, contains little or no gold, and must be timbered. The hanging wall section is fairly hard rock with cross fault zones - fair copper and fair gold; if the whole vein were of this material, shrinkage stope methods - with some reservations - could be used.

This is the only zone in the North Piute that carries any mineable ore.

CONCLUSION

After first setting up a condition - that any future operation of the Walker Mine be done on a "cost-plus" basis - the following presents itself as a possibility:

The ore left above the 700 Level can be mined out readily in two years. The rate of production would be between 150 and 250 tons per day. Due to the scattered locations quite a crew of men would be needed to get out this small tonnage. The ore would come from 750A Stope, 775 Stope (N), 775 Stope (S), 420B Stope, 740-760 Pillars, 605E Stope, 417B Stope, 617D Stope, 717A Stope, 705A Stope, the 709E Wz area, and possibly some from the Piute Pillars. As stated above, at the end of two years, this ore should be all mined out.

The ore below the 700 Level in Piute would have a higher value due to increased gold and silver values and a somewhat higher copper content. To offset this, there is the hoisting cost, the slushing cost, level tramming, pumping maintenance, shaft maintenance and a higher breaking cost, due to more difficult ground conditions, narrower veins and the need for

MINE SUPERINTENDENT'S CLOSING REPORT

Sheet 8

CONCLUSION (Continued)

greater selectivity. With the new 1000 bulkhead in place dewatering would only have to take place in Piute; no water would have to be handled from below 712 and on south. The 1000 Level Piute could be driven some 120 feet south to connect with the 1000 Level from the 706 side, and the 1000 (706), be driven some 800 feet north to connect up to the Piute shaft for disposal of ore and waste. A new pump station should be established and the 1000 pockets cut. With the Piute lower levels ready to go, the maximum production from here would be about 300 tons per day. This maximum is not calculated according to the tons that can be hoisted, but according to the available stopes for production. After two years time, the present available ore should be cleaned up.

Summing up, the picture is of an operation producing a maximum of 500 tons daily (after the necessary preparation has been taken care of), for about two years. Costs will be high because of the relatively small tonnage and number of men that would have to be employed. The number of men would have to be high owing to the wide scattering of the working places and the amount of maintenance work that would have to be done. At the end of two years, all the present available ore would be mined out.

The above discussion of course, is based on the supposition that no new ore will be found. There are possibilities, however. We have exhausted all leads in the immediate vicinity of our ore boundaries, but there are two other possibilities involving long range work. First, the continuation of either the 900 North (Piute) heading, or better yet, the extension of 1017DN through the North Piute Orebody and on past it. Second, further prospecting of the footwall of the 712 "fissure" area - possibly out in the direction of the surface showings mapped and studied by Virgil Chamberlain, the mine Geologist. There are other spots that could be explored, but the above two seem the most logical.

It must still be born in mind, that all of this conclusion is based upon the original set of conditions (or an appropriate substitute), that any work done be on a cost-plus basis, and that any reasonable price for copper would not be enough to make the operation economical.

Respectfully submitted,

(Signed) W. T. Warren, Jr.  
Mine Superintendent

EXHIBIT III

WALKER MINING COMPANY

CLOSING OPERATING REPORT - SALVAGE OPERATION

Stripping of the Mine below the 700 Level was started on Friday, October 24, 1941, and except for a few details, completed on Thursday, November 6, 1941; the operation took thirteen days with a crew of about 50 men.

Stripping consisted of taking out all equipment below the 700 Level - pumps, tools, muck moving equipment, ventilation and electrical equipment, pipe (except pump discharge columns in the Piute and 784 Shafts and some old three-inch on the 1000), and all track switches. No rail was taken up except the straight lengths of 61-1/2 pound rail on the 1000 (1,200 feet).

Six weeks prior to the major stripping operation, a salvage "campaign" was started throughout the entire mine, which consisted of removing all excess pipe, rail, scrap, etc., and storing same in bins and racks outside the Portal. This work netted 11,432 feet of assorted pipe, 8,393 feet of assorted rail, 20,300 pounds of scrap iron, 3,300 pounds of pipe fittings, etc., and made the final operation comparatively simple.

In conjunction with the closing down operation, a concrete bulkhead was put in on the 1000 Level, at a point 1,140 feet south of the end of 1017 DN. This bulkhead was so placed that if and when the Piute lower levels are opened up again, on connecting the 1000 Levels it will not be necessary to drain out the water below the 700 Level, that lies south of Piute (See engineer's sketch).

PUMP DATA

Our salvage operation plan was based entirely on the time allowed for pulling the pumps, and completing the 1000 water bulkhead.

The 706 pumps were pulled October 26th and 27th, taking 12 hours per unit. The water took 32 hours to fill the 1200 Level, three days to come up to the 1100 Level, and ten days to the 1000 Level. From this point, the rise will be very slow to the water level, which is some 20 feet below the 800 Level at 784.

The Piute pumps were pulled October 29th, taking three-and-one-half hours in all. The water reached the back of the 1000 station in two-and-one-half days, and the 900 Level in four days - once in the shaft, the water raised at the rate of .704 sets per hour (from the 1000 to the 900). The rise to the 700 Level will be very slow and will take some three or four months.

Pulling the pumps included removing all compensators, switches, electrical equipment, foot valves, check valves, discharge valves, phones, tools, and miscellaneous equipment.

WALKER MINING COMPANY  
CLOSING OPERATING REPORT  
Sheet 2

STRIPPING DATA

During the pump pulling operation, stripping was carried out in Piute and 706 on a definite, planned basis; 3 shifts, seven days a week. Lay off of the men started Tuesday, November 4th, and ended Thursday, November 6, 1941.

Removal of all equipment was carried out in four phases, as follows:

1. All pneumatic tools and supplies: machines, hoses, bars, arms, steel, wrenches, picks, axes, saws, etc.
2. All secondary muck moving equipment: cars, slushers, scrapers, mucking machines, wire rope, etc.
3. Ventilation and electrical equipment, air and water lines, track switches, etc. General clean-up and re-check of all faces and working places.
4. Locomotives, electric cables in shafts, and any miscellaneous items.

The engineer's inventory sheets show itemized lists of all equipment and supplies removed.

BULKHEAD DATA

The concrete water bulkhead shown on the maps and on the engineer's sketch was constructed as follows:

The section poured averaged 6 ft. x 12 ft. (76 square feet), and is 8 ft. thick. Keyways were cut 18 inches deep on either rib. 104, 18-inch holes were drilled around the circumference of the section, on 2-ft. centers. 1-1/4 inch round steel was driven and wedged in the holes with a minimum of 2 ft. left protruding.

Before pouring, two drain lines were laid; a three-inch line extending 6 ft. south and 10 ft. north of the dam, with a three-inch gate valve on the south side; a six-inch line extending one ft. south and 2 ft. north of the dam, with a six-inch gate valve on the north side. During pouring, the six-inch valve remained shut and the three-inch valve open. On completion of pouring, the three-inch valve was closed off, completely sealing off the dam.

A coffer-dam was put in north of the main dam to hold out the water during the bottom pour, after which the top, sides and bottom were sealed and washed clean. Pouring started at 12:00 noon, October 30th. The bottom was cleaned up and blown out and 4 inches of grout laid down. The aggregate was all hand mixed. The mix was 4 parts gravel (+ 1 inch and - 4

WALKER MINING COMPANY  
CLOSING OPERATING REPORT  
Sheet 3.

BULKHEAD DATA (Continued)

inch), 2-1/2 parts sand, and 1 part cement.

Concrete was poured thick and well puddled in the forms. While pouring the top 1/3 of the dam, 12 grout pipes were laid (1 inch) and placed carefully in order to make sure that grouting would penetrate all pockets. For re-enforcing, old drill steel and old 25 lb. rail was used - this material was interlaced in roughly 14 inch squares. Pouring was completed at 4:00 AM, November 2nd, 64 hours after starting in. After setting 30 hours, the forms were pulled. The face looked very good, although we used one sack of cement in filling an uneven spot on the top part of the dam. 48 hours after the pour the dam was grouted. A cement (quick set - 24 hours) and water mix was used, being forced through the grout pipes by a Worthington plunger pump at about 100 pounds pressure. Seven sacks of cement were forced in and all cracks were sealed. 24 hours after grouting, the perimeter of the dam was gone over again with a sand and cement mixture. We tried to do a thorough job on this bulkhead, and took a great deal of pains with the work. Leonard Palmor was directly in charge and was on the spot during all important phases. Mr. John Cone, Safety Engineer, took several pictures of the dam during the working interval, and one print is included in this report. Mr. Eldon Lomnes, Chief Engineer, has made a complete sketch of the bulkhead, which is included in this report.

GENERAL

All skips in the mine have been blocked up securely, and cables heavily doped.

All powder has been put in the main magazine for future disposal. All primers have been disposed of.

Tin for precipitating purposes has been stored underground, in 704 Drift; it will stay dry and serviceable here.

700 Level and sub-level stations, toolrooms and hoist rooms have been thoroughly cleaned.

All lamps, lamp equipment, and supplies are being crated.

CONCLUSION

The general condition of the mine proper after closing down is excellent. Mr. Whitney and Mr. Palmer have checked and double-checked all working places since the removal of the equipment, and final check-up has been made by myself.

WALKER MINING COMPANY  
CLOSING OPERATING REPORT  
Sheet 4.

CONCLUSION (Continued)

All materials and equipment are out, below the 700 Level with the following exceptions:

1. Old 30 lb. and 40 lb. rail on 800 Level (Piute), 900 Level (Piute), 1000 Level (706), and 1200 Level (706).
2. 800 ft. of track (mainly curved 61 -1/2 lb.), on 1000 Level (706).
3. Pipe columns in the following Shafts and Winzes:
  1. Piute (700 to 1000)
  2. 797 (700 to 1000 sub)
  3. 706 (700 to 1000)
  4. 784 (700 to 1000)

The pipe can be used to good advantage in any future de-watering operation, but under existing conditions, the pipe and rail would not have been worth salvaging.

From the 700 Level up, no "permanent installations" were touched except in 794 Rs. In 794 Rs and the North Orebody in general, everything of any value at all has been salvaged. The upper Piute levels are also stripped clean, except for the shaft and sub-level hoist. In 712, all pipe and rail remain in place.

After November 15th, all men in the operating department will be released. These men include ten bosses and seven days pay men only.

Long sections showing proposed operating plans, etc., will follow this report in about two weeks, as it was deemed advisable to get this in as soon as possible.

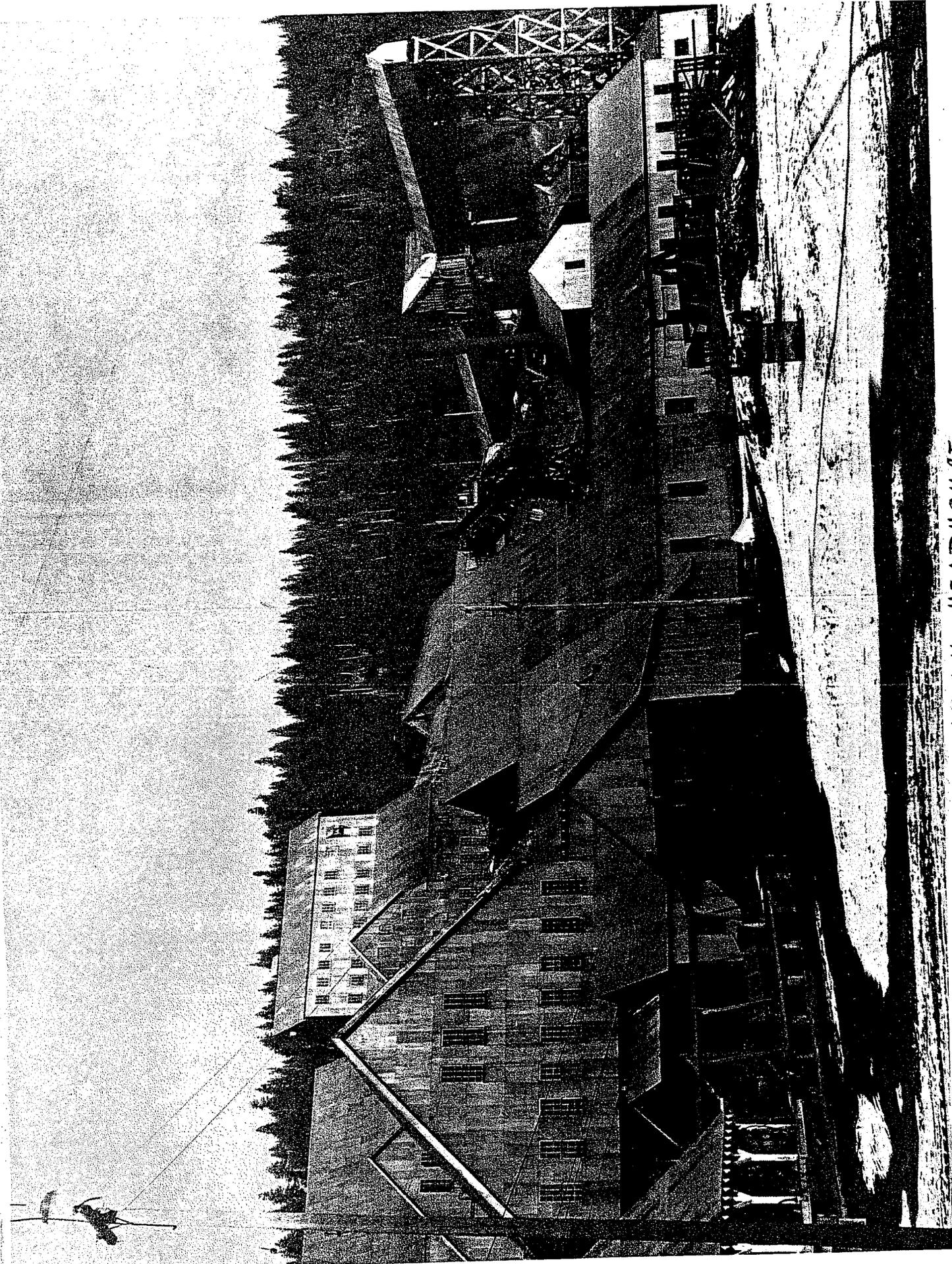
In closing, I would like to say that a great deal of credit is due all bosses on the efficient manner in which the stripping work was carried out - there were no accidents - not even a cut finger, or a broken toe. Leonard Palmer and Bruce Whitney deserve equal credit, as they were the Assistant Superintendents in direct charge.

Respectfully submitted,

(Signed) W. T. Warren, Jr.

W. T. Warren, Jr.  
Mine Superintendent

WTW:dm  
Encl. 2



MILL & TRAM HEADHOUSE

T A B L E I

YEARLY MILL RECORD

	Dry Ton Ore	% Cu.		Oz. Silver		Oz. Au		Mill Das. Opr.	Dry Tons Per Day	Conc. Per Da. Dry Tons
		Head	Tail	Head	Tail	Head	Tail			
rec. 91.33% - 1-1-41 to 11-1-41	291,438.	1.350	0.112	0.695	.111	.050	.0117	258.	1229.25	64.18
1940	437,450.	1.370	0.129	0.691	.118	.0480	.0134	325.33	1344.63	57.42
1939	367,041.	1.287	0.146	0.676	.147	.0516	.0151	302.	1215.37	16.24
1938	66,822.	1.137	0.185	0.938	.232	.0501	.0154	155.	431.11	62.78
1937	447,050.	1.259	0.135	0.822	.171	.0481	.0132	336.33	1329.20	
1936	453,794.	1.247	0.1445	0.8795		.0437		359.	1264.65	
rec. 86.73%										
rec. 85.45	89,524.	1.1730	0.1786					118.	758.68	
Start in Fall after 3 1/2 years										
Shut Down 1934										
Shut Down 1933										
Shut Down 1932	34,741.	1.401	0.1123					30.	1158.03	
Some Curtailment 1931	432,294.	1.6317	0.1648					239.	1495.83	
1930	518,509.	1.6713	0.1596					333.673	1553.94	
1929	457,637.	1.8103	0.1546					361.33	1266.54	
1928	391,275.	1.4431	0.1334					360.	1086.	
1927	340,156.	1.4903	0.11538					361.	942.26	
1926	250,082.	1.8716	0.1474					363.	688.93	
" 94.488 Crd. Ore shipped 1925--	( 41.22	12.44		3.3		0.0975		364.	723.65	
" 1925	( 263,411.	2.432	0.1496							
" 1924	( 205,309.	3.2684	0.176							
" 1924	( no crude									
" 1923	( 87,041.	4.123	0.12946					355.	245.19	
" 1923	( 38,652.	10.441	0.332	3.219		0.0858				
" 1922	( 6,27755	5.6196						217.	278.12	
" 1922	( 6,27755	11.634								
" 1921	Driving main adit and tuning up Mill									
" 1920	3,274.54	12.								
" 1919	41,825.	3.55	0.22							
" 1919	38,785.	3.23	0.28							
TOTAL	5,262,429.31									

Low recovery for 1935 and 1936 is due to some oxidization of broken ore in the stope during the previous three and one-half years of shut down.

T A B L E II

CRUDE ORE & CONCENTRATES REC'D BY SMELTER  
SMELTER SETTLEMENT  
BEFORE SMELTER DEDUCT.

REC	Conc. Rec'd. Dry Tons	Grade % Cu	Pounds Copper	S I L V E R		G O L D	
				Oz Per Ton Conc.	Total Oz.	Oz Per Ton Conc.	Total Oz.
92.75%	5982.5	19.36	907,988	7.462	17128.57	0.1941	145.444
94.78%	2295.24	19.778					
95.59%	14297.	20.025	5,726,224	6.563	93835.89	0.2152	3076.676
	3137.775	11.634	730,339	3.369	10575.22	0.0844	264.951
95.58%	13658.58	22.645	6,186,018	6.678	91207.18	0.2686	3668.927
	7790.	10.441	1,626,673	3.219	25077.519	0.0858	668.231
95.844	26747.347	24.584	12,659,429	8.4577	217764.28	0.3191	8216.408
94.488	25973.367		12,753,759		230665.03		8746.599
	41.217		10,255		136.02		3.194
92.6685	18174.4376		8,818,172		162079.77		7478.94
92.696	19382.565		9,360,264		189974.65		11747.038
	8.494		368		499.38		663.373
	15.209		2,719				.418
	501.148		10,356,598		212796.80		12657.495
91.2944 (New Mill Pt.)	3.708		144		164.89		353.706
92.06	32261.710		15,031,978		294561.86		15400.359
	1.0975		2,145				
	4.053		260		195.15		367.607
91.06	33251.245	23.722	15,775,669	11.561	377765.56	0.4951	16462.046
	5.160	4.860	502	44.195	228.05	84.675	436.923
90.49	25485.471	25.187	12,836,117	12.631	321902.87	.5386	13216.481
	5.5905	2.535	283	31.05	173.59	60.970	340.853
	18.248	2.010	734	3.027	55.24	2.531	46.186
	46.305	24.07	11,147	12.815	296.69	.4619	10.695
92.46	2106.2315	25.393	1,069,672	13.540	28517.68	.6147	1294.671
	5.823	2.33	271	16.675	97.10	24.3725	141.921
	2.094	2.73	114	28.362	59.39	51.153	107.114
	2.6825	2.355	126	37.5725	100.83	62.4525	167.591
85.45	97.342	60.4925	117,769	13.377	47173.90	.5970	2105.235
	3526.51	22.465	1,584,445				

TABLE II (Cont'd)

Conc. Rec'd. Dry Tons	Grade % Cu	Pounds Copper	S I L V E R		G O L D	
			Oz Per Tbn Conc.	Total Oz.	Oz Per Ton Conc.	Total Oz.
Mill Circ. Circuit Conc. 1936	5.88	2,940	9.11	227.79	10.922	273.094
86.73 Conc.	22.442	9,961,664	12.71	282069.45	.5613	12457.480
Precipitates	53.4625	12,710			.0275	.327
Lime Scale	6.4985	322	28.299	183.90	50.789	330.052
Conc. Precip. & Lime Scale						
1937	23.708	10,185,911	13.577	291665.61	.7354	15798.284
"	24.993	1,231,374	18.918	46603.79	.9041	2227.209
"	24.54	8,303,086	11.114	189569.63	.7549	12868.563
"	25.945	10,901,940	11.921	250455.23	.7366	15475.626
"	25.197 *	7,248,128	11.539	*166581.	.7689	*10980.

\* = Recovery - after smelter deduction

RECOVERY	REAGENTS	POUNDS PER TON OF ORE	COST PER TON OF ORE
1941	Lime	0.521	0.0056
	Pine Oil	0.105	0.0071
	Xanthate Z3	0.082	0.0110
	Xanthate Z5	0.041	0.0111
	Sodium Sulphide	0.0075	0.0004
	TOTAL	0.7556	0.0352
	Grinding Balls - 3", 4", & 5"	2.475	0.0856

*Copper Og Silver Og Gold*  
*83700 3592,267 179,396*  
*165,813,51800. 120 Ton Agt 6 Ton Au*  
*Production of Walker*  
*Monic 1920-1941 inc*

TABLE III A

SOUTH ORIBODY - EAST VEIN

BLOCK	GROSS ORE BLOCKED OUT		PROBABLE ORE	POSSIBLE ORE	ESTIMATED RECOVERABLE ORE	G R A D E		
	PREPARED FOR STOPPING	NOT PREPARED FOR STOPPING				% Cu	Oz Ag	Oz Au
650				5,000	3,500	1.36	0.94	0.056
710 - 710A		4,500			3,500	2.32	0.40	0.040
750 A Stope		4,700			2,200	1.60	0.94	0.056
810			4,000		2,600	1.40	0.50	0.040
810				8,000	5,400	1.40	0.50	0.050
810 A				10,000	7,500	1.70	0.60	0.050
850 A			7,000		5,200	1.60	0.40	0.040
850 A				13,000	10,000	1.30	0.40	0.040
910 Stope		2,500			1,500	1.78	1.21	0.058
910				12,000	9,000	1.40	1.21	0.058
950 A				20,000	15,000	1.30	0.40	0.040
1010 Stope		4,000			3,000	1.28	0.60	0.050
1010 A "		4,000			3,000	1.50	0.60	0.050
1050 A		3,000			2,000	1.24	0.50	0.040
1050 A			17,000		13,000	1.11	0.50	0.040
1110				17,000	NONE	1.20	0.50	0.040
1110 A				14,000	"	1.30	0.46	0.030
1150 A				12,000	"	1.20	0.40	0.030
TOTAL EAST VEIN	22,700	28,000	111,000	86,400	1.41	0.59	0.045	
Ore Blocked Out	22,700			15,200	1.65	0.65	0.048	
Probable Ore		28,000		20,800	1.27	0.48	0.040	
Possible Ore			111,000	50,400	1.39	0.62	0.047	
Estimated Recoverable Ore				86,400	1.41	0.59	0.045	

TABLE III A

(Continued)

## SOUTH OREBODY - WEST VEIN

BLOCK	GROSS ORE BLOCKED OUT		ESTIMATED RECOVERABLE ORE	G R A D E		
	PREPARED FOR STOPPING	NOT PREPARED FOR STOPPING		% Cu	Oz Ag	Oz Au
790 - 790 A	1,500		700	0.92	0.37	0.039
775	6,500		3,000	1.00	0.80	0.040
775		8,000	6,000	1.21	0.80	0.040
775		24,000	18,000	1.00	0.80	0.040
890	5,000		3,000	1.65	0.90	0.050
890		10,000	7,500	1.20	0.95	0.051
875		22,000	16,500	1.00	0.80	0.045
1090	5,000	10,000	3,600	1.65	0.50	0.040
1090			7,700	1.65	0.50	0.040
1090		4,000	3,000	1.38	0.50	0.040
1190		14,000	NONE	1.25	0.40	0.040
TOTAL WEST VEIN	18,000	10,000	69,000	1.19	0.75	0.043
Ore Blocked Out	18,000		10,300	1.41	0.70	0.043
Probable Ore		10,000	7,700	1.65	0.50	0.040
Possible Ore			51,000	1.08	0.80	0.043
Estimated Recoverable Ore			69,000	1.19	0.75	0.043
EAST VEIN	22,700		15,200	1.65	0.65	0.048
		28,000	20,800	1.27	0.48	0.040
			50,400	1.39	0.62	0.047
		111,000	10,300	1.41	0.70	0.043
			7,700	1.65	0.50	0.040
		10,000	51,000	1.08	0.80	0.043
TOTAL SOUTH OREBODY	40,700	38,000	155,400	1.31	0.66	0.044
Ore Blocked Out	40,700		25,500	1.56	0.67	0.046
Probable Ore		38,000	28,500	1.37	0.48	0.040
Possible Ore			101,400	1.23	0.71	0.045
Estimated Recoverable Ore			155,400	1.31	0.66	0.044

Nov. 1, 1941

## Central Orebody

Block	Prepared for stoping	Gross Ore Blocked Out Not prepared for stoping	Gross Pillars	Probable Ore	Possible Ore	Estimated Recoverable Ore	%Cu.	Grade oz Ag.	oz Au.
580			3500			2500	2.87	0.50	0.010
680-780		10,000				6000	3.00	1.00	0.080
700 level pillars		24,000				16,000	2.32	0.40	0.030
880&880 Stope		36,000	6900			4900	1.69	0.70	0.080
880						2300	1.69	0.70	0.080
880 A	13,000		5000			9800	2.17	0.50	0.040
880 A						3700	1.50	0.40	0.040
980 B			15,000			5000	1.52	0.40	0.050
980 A Stope		6000	2500			2000	1.78	0.50	0.050
980 A "						1000	1.74	0.50	0.050
1080			27,000		15,000	5000	1.47	0.60	0.040
1080						7500	1.28	0.40	0.040
1080 A		5200	3200			2600	1.79	0.40	0.040
1080 A						1600	1.94	0.50	0.040
1180				38,000		none	1.30	0.40	0.040
1180 A			6000			"	1.50	0.50	0.040
1180 A				6000		"	1.30	0.40	0.040
<b>TOTALS</b>		13,000	81,200	69,100	59,000	69,900	1.99	0.52	0.045
Ore Blocked Out						41,300	2.25	0.55	0.047
Probable Ore		94,200	69,100		59,000	21,100	1.73	0.50	0.044
Possible Ore						7,500	1.28	0.40	0.040
Estimated Recoverable Ore						69,900	1.99	0.52	0.045

III-C

Nov. 1, 1941

North Orebody

Block	Prepared for stoping	Gross Ore Blocked Out Not prepared for stoping	Gross Pillars	Probable Ore	Possible Ore	Estimated Recoverable Ore	%Cu.	Grade oz Ag.	oz Au.
230			3,000			1,500	1.83	0.40	0.030
230-330			5,000			3,500	1.30	0.40	0.030
310-410			5,000			3,000	1.60	0.40	0.040
610 A(420B)			14,000			6,000	1.09	0.40	0.030
610 A(620B)			27,000			18,000	0.86	0.40	0.030
610-630(5,000 T more produced than estimated)			2,800			none	1.42	0.40	0.040
640-740			4,000			none	1.30	0.60	0.050
700 Level Pillars (740-760)			71,500			46,700	1.34	0.60	0.050
920			113,400	93,000		46,500	1.17	0.40	0.040
920 A-820 A			84,800			none	1.19	0.60	0.050
920-820			49,000			"	1.36	0.80	0.050
930			55,800			4,600	1.52	0.60	0.050
940						none	1.41	0.60	0.050
950				45,000		"	0.91	1.00	0.015
1020			28,000			12,000	1.58	0.80	0.030
1030			32,600			3,600	1.15	0.50	0.030
1040			30,000			2,000	1.37	0.50	0.030
1120				21,000		none	1.59	0.50	0.030
1120					21,000	"	1.59	0.50	0.030
1130				11,200		"	1.45	0.50	0.030
1130					11,200	"	1.45	0.50	0.030
1140				11,600		"	1.51	0.50	0.030
1140					11,600	"	1.51	0.50	0.030
1220				9,000		4,000	1.30	0.50	0.030
1230				6,000		none	1.50	0.50	0.030
1240				5,500		"	1.49	0.50	0.030
TOTALS			525,900	202,300	43,800	151,400	1.25	0.51	0.040



III-E

Nov. 1, 1941

712 OREBODY

Block	Gross Ore Blocked Out		Probable Ore	Possible Ore	Estimated Recoverable Ore	% Cu	Grade oz Ag.	Grade oz Au.
	Prepared for Stopping	Not Prepared for Stopping						
505			4,000	3,000	1,300	1.35	1.50	0.030
505					3,000	1.28	1.50	0.030
505				3,000	2,200	1.28	1.50	0.030
505 B		4,000			2,000	1.71	1.00	0.030
505 B				15,000	11,200	1.03	1.00	0.020
605		4,000			none	3.64	2.00	0.040
605		6,500			"	4.55	2.00	0.040
605				7,000	3,500	1.68	1.50	0.030
605 B		4,000			2,000	1.66	1.20	0.030
605 C		2,000			1,500	1.92	1.00	0.030
605 C				16,000	12,000	1.00	0.50	0.020
705		15,000			none	1.60	1.30	0.030
705		11,000			2,000	1.37	1.50	0.035
705			6,000		4,000	1.95	0.50	0.030
705 B		8,000			4,000	1.10	0.80	0.020
700 level pillars		3,000			1,000	1.83	2.00	0.050
805			25,000		15,000	1.86	1.50	0.040
805				25,000	15,500	1.74	1.20	0.040
East Split								
705A	7,500				6,000	1.97	1.20	0.059
805 A			8,000		6,000	1.40	1.00	0.060
805 A				5,000	3,700	1.35	1.00	0.050
Footwall Vein								
317 C			19,800		10,800	1.66	0.86	0.030

III-E  
(continued)

712 OREBODY

Block	Prepared for stoping	Gross Ore Blocked Out Not prepared for stoping	Gross Pillars	Probable Ore	Possible Ore	Estimated Recoverable Ore	%Cu.	Grade oz Ag.	oz Au.
317 C				1,600	1,600	900	1.40	0.70	0.030
417 C		37,000		10,400	22,600	15,000	1.47	0.70	0.030
417						7,800	1.43	0.84	0.024
417						11,300	1.41	0.89	0.029
417 B	5,200					1,700	2.00	1.70	0.030
517 D				8,400	8,800	4,200	1.26	0.20	0.023
517 D						3,700	1.33	0.26	0.025
517 C	32,800		2,100			9,900	1.18	0.58	0.026
517 C						1,000	1.00	0.59	0.015
517		39,000		18,700		20,000	1.96	0.67	0.022
517						9,000	1.59	0.55	0.023
517 B	5,000					2,000	1.50	1.08	0.020
617 D	10,000					5,000	1.13	0.20	0.020
617 D				3,000		2,000	1.10	0.30	0.020
617 C			1,000			500	0.90	1.32	0.023
617				20,200		10,000	1.76	0.45	0.023
617 B(605 E Stope) 22,500						9,000	1.40	1.43	0.030
717 B(705 E Stope)			4,700			1,200	1.30	1.40	0.029
1017 D					17,000	9,000	1.10	.40	0.030
TOTAL	83,000	76,000	67,300	103,300	144,200	229,900	1.50	0.87	0.030
Ore Blocked Out Probable Ore			226,300	103,300		83,800	1.56	0.87	0.029
Possible Ore				144,200		61,800	1.60	0.93	0.033
Estimate Recoverable Ore						84,300	1.37	0.83	0.029
						229,900	1.50	0.87	0.030

November 1, 1941

TABLE III F

PIUTE OREBODY

BLOCK	GROSS ORE BLOCKED OUT		GROSS PILLARS	PROBABLE ORE	POSSIBLE ORE	ESTIMATED RECOVERABLE ORE	G R A D E		
	FOR STOPPING	NOT PREPARED FOR STOPPING					% Cu.	Oz. Ag.	Oz. Au
615			108,400			10,000	1.20	1.00	0.050
625-725-725 A			33,000			8,000	1.15	0.50	0.040
735 A			5,000			2,000	1.08	0.80	0.050
765			14,000			5,000	0.95	1.20	0.040
745-755			36,000			10,000	1.10	1.00	0.030
Above 700 South			75,000			40,000	1.06	1.00	0.030
" 700 North			40,000			20,000	1.22	0.80	0.030
835	43,200					5,400	1.05	1.00	0.030
835				20,200		3,200	1.05	1.00	0.030
845			141,000			7,000	1.20	1.27	0.050
855			113,000			5,700	1.25	1.00	0.040
865			60,000			4,800	1.34	1.20	0.040
815			135,300			4,000	1.34	1.20	0.040
825			61,700			NONE	1.10	1.00	0.030
935				10,600		5,000	1.30	0.90	0.030
935					23,200	10,000	1.30	0.90	0.030
945	37,000		40,000			39,000	1.32	0.99	0.037
(94,200 too high)						15,000	1.27	0.90	0.030
945				34,000		15,000	1.37	0.80	0.030
955	22,000		32,000			15,000			
-6,000 too much									
955				20,000		10,000	1.20	0.80	0.030
955					5,200	2,600	1.00	0.80	0.030
965		12,700				6,400	1.25	0.80	0.030
965				12,000		6,000	1.00	0.50	0.030
965					6,300	3,700	1.00	0.50	0.030
915	26,200					13,000	1.00	1.00	0.030
915			42,500			10,000	1.21	1.00	0.030
915				20,400		10,400	1.10	0.90	0.030

TABLE III F  
(Continued)

PIUTE OREBODY

BLOCK	GROSS ORE BLOCKED OUT		GROSS PILLARS	PROBABLE ORE	POSSIBLE ORE	ESTIMATED RECOVERABLE ORE	G R A D E		
	PREPARED FOR STOPPING	NOT PREPARED FOR STOPPING					% Cu.	Oz. Ag.	Oz. Au
1035				2,600		1,300	1.75	0.56	0.119
1035					34,000	17,000	1.30	0.72	0.035
1045				26,400		13,200	1.45	0.80	0.030
1045					15,100	7,500	1.40	0.80	0.030
1055				8,000		4,000	1.37	0.80	0.030
1055					2,500	1,200	1.25	0.60	0.030
1015				6,600		3,300	1.05	0.90	0.030
1015					4,300	2,100	1.05	0.90	0.030
TOTALS	128,400	12,700	956,900	140,600	110,800	320,800	1.21	0.90	0.034
Blocked Out Ore			1,078,000			205,300	1.19	0.96	0.035
Probable Ore				140,600		68,200	1.25	0.82	0.032
Possible Ore					110,800	47,300	1.25	0.78	0.032
Estimated Recoverable Ore						520,800	1.21	0.90	0.034

TABLE III G

NORTH PIUTE ORIBODY

BLOCK	GROSS ORE BLOCKED OUT		ESTIMATED RECOVERABLE ORE	G R A D E		
	PREPARED FOR STOPPING	NOT PREPARED FOR STOPPING		% Cu	Oz. Ag.	Oz. Au
954-40 N & S	27,000 <sup>T</sup>		13,500	1.79	0.30	0.020
"		19,800	9,900	1.67	0.30	0.010
"		14,200	7,100	1.67	0.30	0.010
Below 900		22,400	11,200	1.67	0.30	0.010
"		27,100	13,500	1.67	0.30	0.010
TOTALS	27,000 <sup>T</sup>	42,200	55,200	1.70	0.30	0.012
Blocked Out Ore	27,000		13,500	1.79	0.30	0.020
Probable Ore		42,200	21,100	1.67	0.30	0.010
Possible Ore		41,300	20,600	1.67	0.30	0.010
Estimated Recoverable Ore		55,200	55,200	1.70	0.30	0.012

TABLE III H

COMPARISON NOV. 1941 RECOVERABLE ORE ESTIMATE WITH JAN. 1941 ESTIMATE

CLASS OF ORE	ESTIMATE OF JAN 1 1941	EXTRACTION REMAINDER	WRITTEN OFF OR TRANSFERRED TO NON-RECOVERABLE PILL.	ABSTRACTED FOR RECLASSIFICATION	RECOVERED FROM PREVIOUS CLASSIFICATION	DEVELOPED OR ADDITIONAL RECOVERABLE PILLARS	ESTIMATE NOV. 1, 1941	% Cu.	Oz. Ag.	Oz. Au.
SOUTH O. B.										
Blocked Out	37,800	1,307	3,293	7,700	---	---	25,500	1.56	0.67	0.046
Probable Ore	23,800	---	---	3,000	7,700	---	28,500	1.37	0.48	0.040
Possible Ore	98,400	---	---	---	3,000	---	101,400	1.23	0.71	0.045
TOTALS	160,000	1,307	3,293	10,700	10,700	---	155,400	1.31	0.66	0.044
CENTRAL O. B.										
Blocked Out	71,200	23,763	4,166	13,900	---	11,929	41,300	2.25	0.55	0.047
Probable Ore	14,700	---	---	7,500	13,900	---	21,100	1.73	0.50	0.044
Possible Ore	NONE	---	---	---	7,500	---	7,500	1.28	0.40	0.040
TOTALS	85,900	23,763	4,166	21,400	21,400	11,929	69,900	1.99	0.52	0.045

TABLE III H  
(Continued)

COMPARISON NOV. 1941 RECOVERABLE ORE ESTIMATE WITH JAN. 1941 ESTIMATE

CLASS OF ORE	ESTIMATE OF JAN 1 1941	EXTRACTION REMAINDER	BALANCE	WRITTEN OFF OR		RECLASSIFICATION	ABSTRACTED FOR NON-RECOVERABLE	TRANSFERRED FROM PREVIOUS CLASSIFICATION	DEVELOPED OR ADDITIONAL RECOVERABLE	ESTIMATE NOV. 1, 1941	% Cu.	Oz. Ag.	Oz. Au.
				FOR TO NON-RECOVERABLE	RECOVERABLE								
<b>NORTH O. B.</b>													
Blocked Out	214,700	80,085	134,615	29,208	58,907	41,993	100,900	41,993	100,900	1.28	0.55	0.040	
Probable Ore	4,000	---	4,000	---	4,000	---	50,500	---	50,500	1.18	0.41	0.039	
Possible Ore	10,000	5,223	4,777	4,777	---	---	NONE	---	NONE	---	---	---	
TOTALS	228,700	85,308	143,392	33,985	62,907	46,500	151,400	41,993	151,400	1.25	0.51	0.040	
<b>710 OREBODY</b>													
Blocked Out	---	---	---	---	---	---	---	---	---	---	---	---	
Probable Ore	---	---	---	---	---	---	---	---	---	---	---	---	
Possible Ore	26,000	---	26,000	---	26,000	---	26,000	---	26,000	1.00	1.39	0.033	
TOTALS	26,000	---	26,000	---	26,000	---	26,000	---	26,000	1.00	1.39	0.033	
<b>712 OREBODY</b>													
Blocked Out	107,500	45,066	62,434	---	62,434	---	---	---	21,366	1.56	0.87	0.029	
Probable Ore	58,200	5,862	54,338	---	54,338	---	---	5,000	2,462	1.60	0.93	0.033	
Possible Ore	88,400	1,000	87,400	---	82,400	---	---	---	1,900	1.37	0.83	0.029	
TOTALS	254,100	49,928	204,172	---	199,172	---	---	5,000	25,728	1.50	0.87	0.030	
<b>PIUTE O. B.</b>													
Blocked Out	391,300	71,393	319,907	97,090	195,317	6,800	205,300	5,183	205,300	1.19	0.96	0.035	
Probable Ore	60,900	5,795	55,105	6,700	41,105	20,500	68,200	6,595	68,200	1.25	0.82	0.032	
Possible Ore	56,000	---	56,000	23,800	25,400	14,300	47,300	7,600	47,300	1.25	0.78	0.032	
TOTALS	508,200	77,188	431,012	127,590	261,822	41,600	320,800	17,378	320,800	1.21	0.90	0.034	
<b>NORTH PIUTE O. B.</b>													
Blocked Out	35,000	4,758	30,242	---	1,942	9,700	13,500	1,858	13,500	1.79	0.30	0.020	
Probable Ore	35,000	---	35,000	18,200	7,200	28,300	21,100	---	21,100	1.67	0.30	0.010	
Possible Ore	35,000	---	35,000	28,700	3,100	17,500	20,600	---	20,600	1.67	0.30	0.010	
TOTALS	165,000	4,758	100,242	46,900	2,158	55,500	55,200	1,858	55,200	1.70	0.30	0.012	
GRAND TOTAL	1,367,900	242,352	1,125,648	215,934	729,014	180,700	1,008,600	98,886	1,008,600	1.58	0.85	0.042	

November 1, 1941

TABLE III-1

RECAPITULATION SHEET

RECOVERABLE ESTIMATE OF JAN 1	DEDUCTIONS		INCREMENTS		DEVELOPED OR ADDITIONAL RECOVERABLE ESTIMATE	PILLARS NOV. 1, 1941	Cu.	Ag.	Oz.	Au		
	EXTRACTION REMAINDER	WRITTEN OFF OR TRANSF'D. TO NON-RECOVERABLE PILL.	ABSTRACTED FOR RECLASSIFICATION	TRANSFERRED FROM PREVIOUS CLASSIFICATION								
Blocked Out	857,500	226,372	631,128	123,900	13,757	373,471	16,500	280,329	470,300	1.41	0.79	0.036
Probable Ore	196,600	9,657	186,934	41,800	24,900	120,245	121,900	9,057	251,200	1.41	0.65	0.034
Possible Ore	313,800	6,223	307,577	15,000	57,277	235,300	42,300	9,500	287,100	1.29	0.78	0.034
GRAND TOTAL	1,367,900	242,252	1,125,648	180,700	215,934	729,014	180,700	98,886	1,008,600	1.37	0.75	0.035

CLASS OF ORE	JANUARY 1, 1941		NOVEMBER 1, 1941		INCREASE		DECREASE	
	RECOVERABLE	GROSS	RECOVERABLE	GROSS	RECOVERABLE	GROSS	RECOVERABLE	GROSS
Blocked Out	857,500	2,554,100	470,300	1,992,100	387,200	562,000	387,200	562,000
Probable Ore	196,600	448,000	251,100	595,500	54,500	84,100	26,600	84,100
Possible Ore	313,800	730,200	287,200	646,100	54,500	646,100	413,800	646,100
GRAND TOTAL	1,367,900	3,732,300	1,008,600	3,233,700	359,300	1,008,600	359,300	1,008,600

TABLE IV--A

(H. A. Geisendorfer using Plate I)

From Plate #1 Ore Remaining above 7th Level - Estimate by H.A.G.--using Long Stope Section

<u>Place</u>	<u>Tons Sure</u>	<u>Tons Probable</u>	<u>Grade % Cu.</u>	<u>Development Possibilities</u>
S.O. Body--N.W. Sect. above 7th Level	5,000	10,000	1.35	Probably some
So. End of Central		25,000	1.10	None
N. End of Central	5,000	Pillars	2.00	40,000 T-2% in Pillars--above Haulage available on first salvage only
S.O. Body F.W.				Possibility of considerable 0.80 to 1% above 6th Level
N. Ore Body--S. End	20,000		1.00	Probably considerable ore 1% in big block south of this ore body--heavy pillars above
Block between N. Ore body 712 Ore Body	40,000	100,000	1.00	This block has large development possibilities. Undeveloped except sixth Level which is only partly on vein--800' long and nearly 1000' high--good surface showing--with much Barite.
712 Ore Body--Main Vein	35,000	50,000	1.15	South end towards surface has dev. possibility
712 Hanging Wall	7,000		2.00	
712 Footwall Sec.	120,000	135,000	1.50	Possibility of developing more ore
Pinte--S.end--Pillars above 7th Level	70,000	50,000	1.10	Conditioned on abandoning the level. (Levels can be abandoned as caving will not affect foot wall drifts)
Pinte-N. end Pillars above 7th Level	30,000	10,000	1.25	Conditioned on abandoning the level
	332,000	380,000	1.28	Considerable development possibilities as above
				@ 1.28% cu.
				@ 1.23% cu.

TABLE IV-B

(H. A. Geisendorfer Using Plate I)

From Plate I Ore Remaining Below The 7th Level--Estimated By H.A.G. Using Long Section In Connection With Mine Superintendent's Closing Report.

<u>Place</u>	<u>Tons Sure</u>	<u>Grade % Cu</u>	<u>Tons Probable</u>	<u>% Cu Grade</u>	<u>Development Possibilities</u>
North Piute Orebody	20,000	1.67	80,000	1.67	10 Level should be driven out under this orebody-with large possibilities.
Piute Orebody-N. of Shaft	30,000	1.25	30,000	1.25	May be possibilities below 9th Level.
Piute Orebody-S. of Shaft	100,000	1.30	130,000	1.30	Possibilities below 9th Level-and in salvage.
712 Orebody					No development except 709 E.W. showing 5% ore-large possibilities.
North Orebody between 7th and 10th Levels	60,000	1.25	75,000	1.30	Development and salvage possibilities.
North Orebody between 10th and 12th Levels			110,000	1.50	Good Ore developed on 12 Level-so large ore possibilities in this area but mining conditions difficult.
Central Orebody between 7th and 10th Levels	30,000	1.70	40,000	1.63	Some salvage operations possible.
Central Orebody-below 10th Level			50,000	1.32	Possibilities-little development has been done.
South Orebody-H. Wall between 7th and 10th Level (Pillars)	25,000	1.40	60,000	1.37	Must be developed by 8th and 9th Levels mostly.
South Orebody below 10th Level			20,000	1.25	Indicated by 10th Level.

TABLE IV-B  
(continued)

(H. A. Geisendorfer Using Plate I)

From Plate I Ore Remaining Below The 7th Level--Estimated By H.A.G. Using Long Section In Connection With Mine Superintendent's Closing Report.

<u>Place</u>	<u>Tons Sure</u>	<u>Grade % Cu</u>	<u>Tons Probable</u>	<u>% Cu Grade</u>	<u>Development Possibilities</u>
South Orebody	12,000	1.65			Block above pump station.
	<u>277,000</u>	<u>1.38</u>	<u>515,000</u>	<u>1.42</u>	

Upon starting up, the Piute Orebody below the 7th level should be pumped out first. This makes 350 gal. water after draining storage in the rocks. Later the 10th and 12th levels South of Piute can be pumped out - this orebody makes about 500 gal. per minute after draining storage in the rocks.

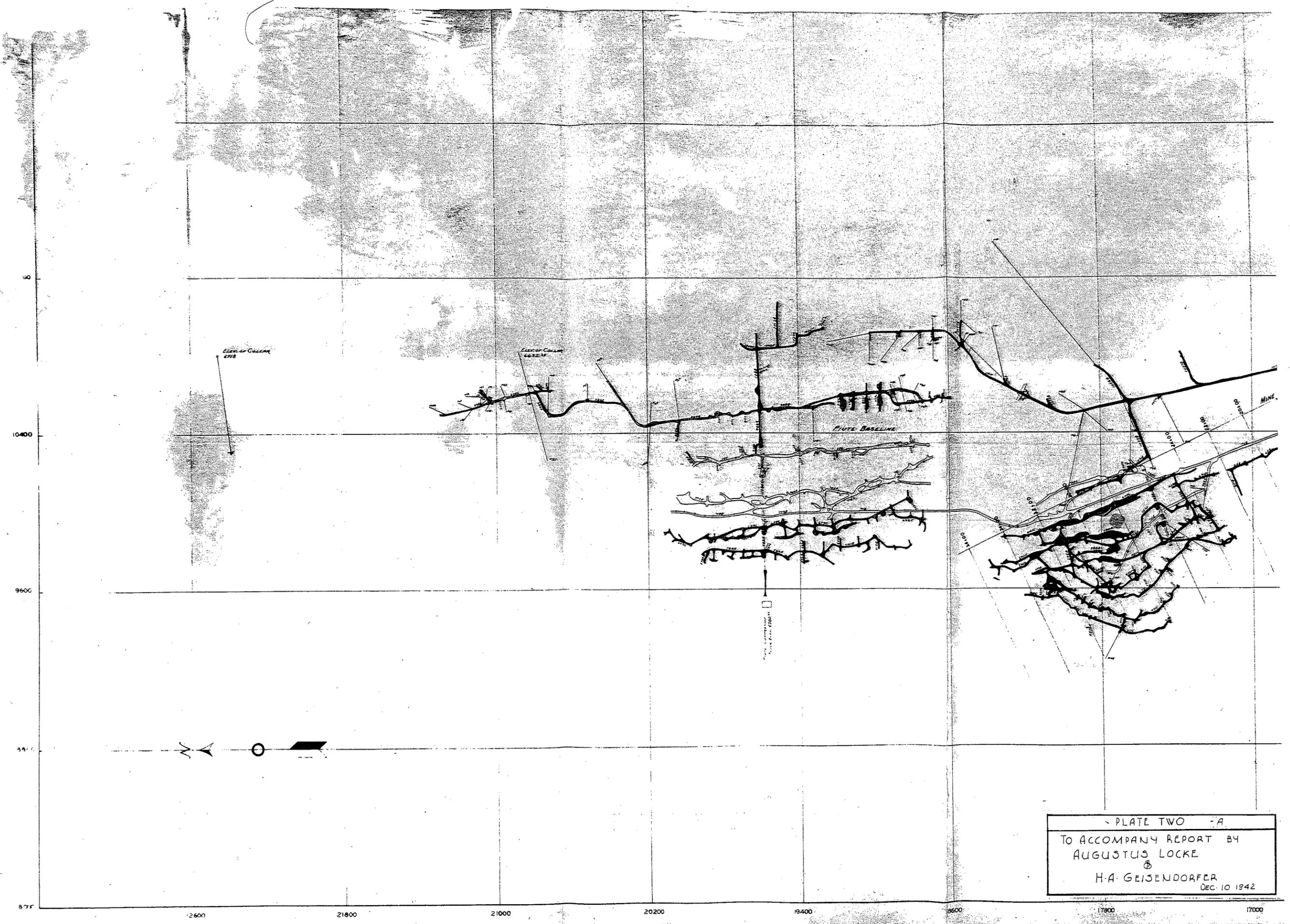


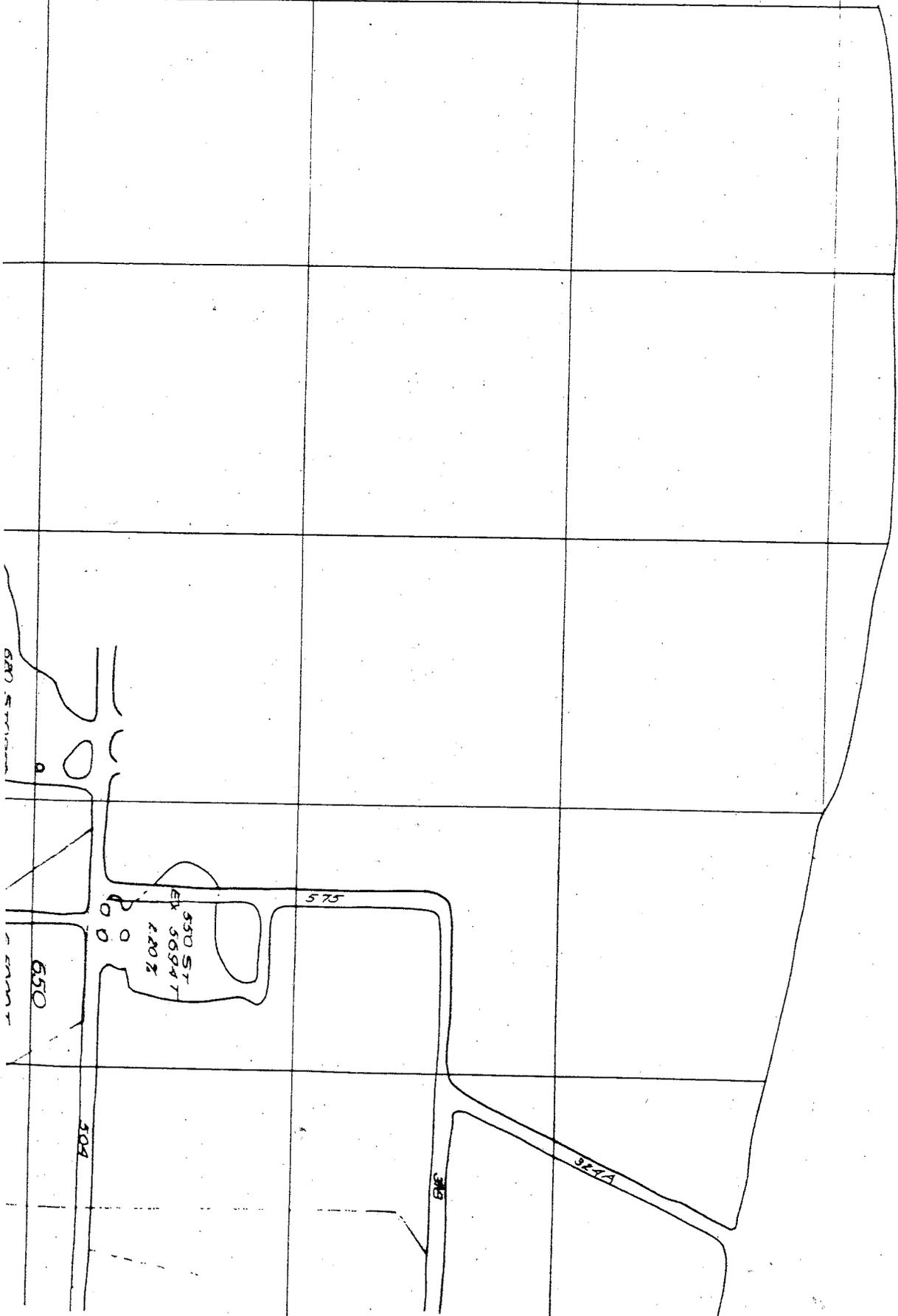
PLATE TWO -A  
TO ACCOMPANY REPORT BY  
AUGUSTUS LOCKE  
H.A. GEISENDORFER  
DEC. 10 1942

7000

6800

6600

6400



530 ST

550

509

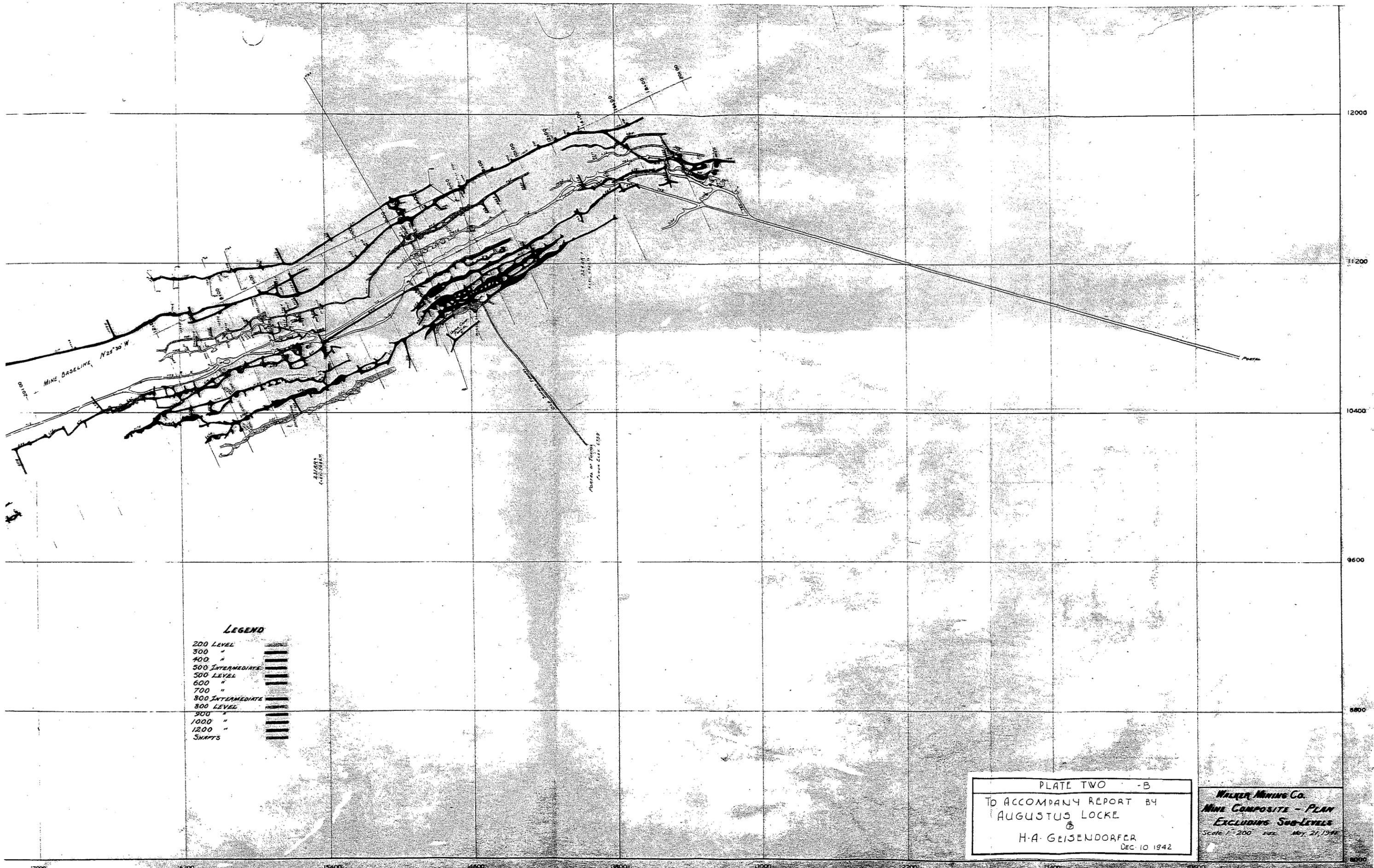
575

587A









**LEGEND**

- 200 LEVEL
- 300 "
- 400 "
- 500 INTERMEDIATE
- 500 LEVEL
- 600 "
- 700 "
- 800 INTERMEDIATE
- 800 LEVEL
- 900 "
- 1000 "
- 1200 "
- SHAFTS

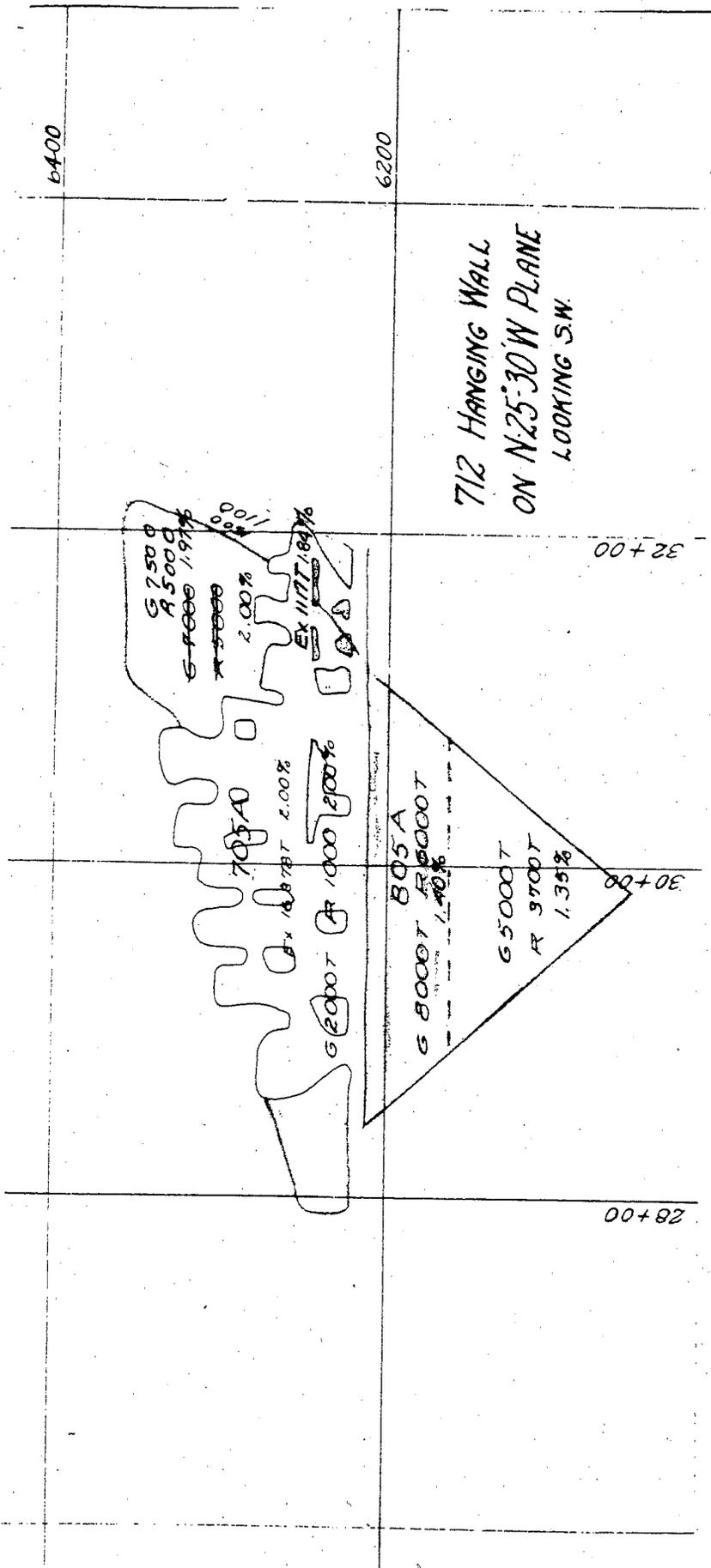
PLATE TWO - B  
 TO ACCOMPANY REPORT BY  
 AUGUSTUS LOCKE  
 &  
 H.A. GEISENDORFER  
 DEC. 10 1942

WILKER MINING CO.  
 MINE COMPOSITE - PLAN  
 EXCLUDING SUB-LEVELS  
 SCALE 1" = 200' FEB. 16, 1944

6400

6200

712 HANGING WALL  
ON N25°30'W PLANE  
LOOKING S.W.



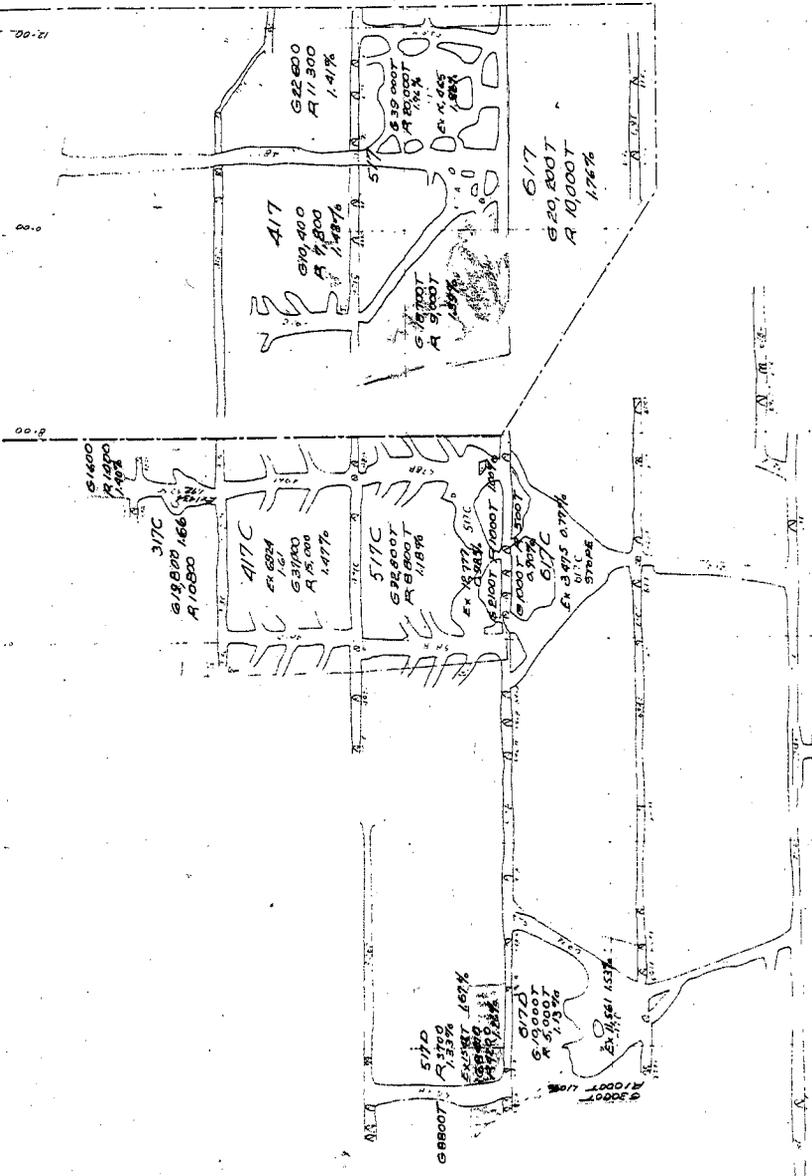
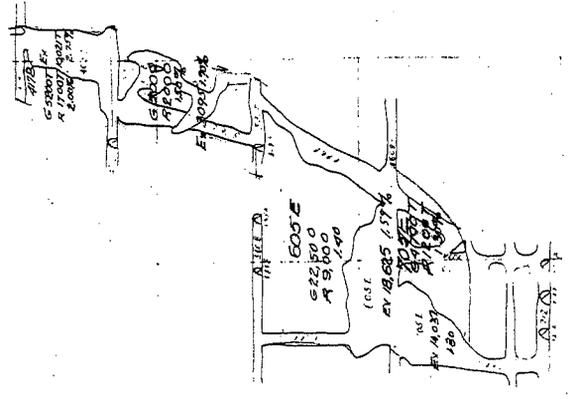
6750 0  
 R 5000  
 64000 1.97%  
 65000  
 2.00%  
 EXHIBIT 184%  
 705.40  
 62000 R 1000 2.00%  
 65000 T  
 R 9700 T  
 1.35%

805 A  
 68000 T R 5000 T  
 1.40%

32+00

28+00

28+00



1017D  
G 17000  
A 9000  
1.10

LAYOUT of 1071B

