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**KEEP THIS ON TOP**  
DRILLING COSTS

**MD**

File No. 13-19.4-(3A)

Section No.

From

To

Subject: -

Drilling

Miscellaneous

September 27, 1955

MEMORANDUM FOR: Mr. F. V. Richard

DRAPER PROJECT  
Drilling Costs

Now that all of the bills are in, the total drilling costs for the Draper project can be listed. These are shown below, along with the cost of drilling the water well and installing 10" casing:

Total Costs

|                             |                    |
|-----------------------------|--------------------|
| Salaries -----              | \$2,867.00         |
| Travel Expense -----        | 170.00             |
| Company Auto Expense -----  | 169.00             |
| Drilling, etc. -----        | 14,551.00          |
| Assaying and sampling ----- | 7.00               |
| Supplies -----              | 2,712.00           |
| Sales and Use Tax -----     | 31.00              |
| Freight and express -----   | 4.00               |
| Total                       | <u>\$20,511.00</u> |

Water Well Expense

|   |                   |
|---|-------------------|
| Footage drilled (150' of 9" ) 300' @ 80¢ per ft. profit ----- | \$ 240.00         |
| (150' of 12")   |                   |
| Rental of drill and equipment for 3 days -----                | 71.50             |
| Salaries of drillers for 3 days -----                         | 192.00            |
| 10" pipe (160') -----   | 863.38            |
| 9" and 12" bits and adapters, railroad express, etc. -----    | 949.08            |
| Total   | <u>\$2,315.96</u> |

Drilling Expense

\$20,511.00 - \$2,315.96 ----- \$18,195.04  
Total feet drilled (without water well) 1758

Total cost per foot =  $\frac{\$18,195.04}{1758}$  or \$10.35

ORIGINAL SIGNED BY  
W. R. LANDWEHR  
E. W. NEWMAN

EWV:sl  
cc: W. R. Landwehr ✓  
R. J. Lacy  
J. F. Lord

W. R. L.  
SEP 27 1955

S. I. P.  
DEC 1 1954

October 13, 1954

MEMORANDUM TO: Mr. W. R. Landwehr

DRILL HOLE SAMPLING  
(SIDE WALL CORING)

The A.E.C. has been experiencing considerable difficulty in getting dependable samples from the holes they have been drilling in the Gas Hills area, which will also be one of our problems when we drill the Jenkins and Hand claims. As diamond drilling is fairly expensive and may not be practical in these formations, I decided to investigate the feasibility of putting down inexpensive seismic-type holes, probing them, and then taking side wall cores at the radioactive horizons.

With this in mind, I went over to the Schlumberger office while I was in Casper, Wyoming and had a talk with the men in charge of this work. They do electric logging, radioactivity logging and side wall coring as part of their service, and have all of the equipment on hand for this work. They gave me the attached pamphlet describing their various services.

On pages 24 and 25 of this pamphlet, a picture of the side wall coring device is shown. It consists essentially of a central tube with hollow sample bits spaced about 6" apart. The hollow bits are fired like bullets into the side of the hole at any place a sample is needed. The location of the samples is controlled by the instrument at the collar which shows the exact depth of the sampling device. The firing is done electrically from the surface. The size of the standard sample thus taken is 3/4" in diameter and 2-1/4" long. The drill hole must be at least 5 1/2" in diameter in order to accommodate the sampler.

The cost of this service is shown on the price schedule attached to the first page of the pamphlet. It can be summarized as follows:

Mileage charge - \$0.50 per mile for all mileage in excess of 150 miles round trip.

Service charge - \$150.00 for setting up over each hole.

Operation charge - \$20.00 per core.

Thus, if an average of 5 samples per hole were taken, it would cost \$250.00 per hole plus any transportation charges to be pro-rated according to the number of holes. This is quite expensive considering the small size of the samples taken, and the fact that a 5 1/2" hole has to be drilled which would rule out the 4" seismic rigs. Thus the drill hole itself would be fairly expensive. Another disadvantage is the fact that in horizontal formations the sample only represents a 3/4" thickness of a particular horizon instead of crosscutting the formation like a core drill does and getting an idea of the width of the ore.

For the above reasons this method was ruled out as far as the Jenkins and Hand work is concerned. It might be useful in some special case, however, at one of our projects, which is the reason for calling attention to it. If it were to be used it would probably pay to have a radioactivity log and an electric log made of the hole at the same time in order to justify the \$150 charge made for setting up over the hole.

ORIGINAL SIGNED BY  
E. W. NEWMAN  
E. W. NEWMAN

1. Drilling — Core Rotary Diamond Drills.
2. Drilling Costs — \$1.75 to \$2.25 per foot according to geological formation.
3. \$25.00 an hour for any large amount of core drilling on Igneous rock.
4. Holes will be logged.
5. Holes drilled will be 4 3/4" in diameter.
6. 2 1/4" diameter core will be brought up for analysis.
7. No charge for moving drilling rig on or off property.
8. Rigs will be available at your earliest convenience.
9. Drilling contractors will consider taking part cash and part stock for drilling.
10. Drillers use Mayhew Rotary 1,000 and 2,000 drilling rigs.
11. The driller will core a sufficient amount of ore for assay purposes not to exceed 5% of total drilling program.

|  |                  |
|--|------------------|
| Chinle and Shinerump.....                                      | \$ 1.75          |
| Morrison formation .....                                       | 2.00             |
| Igneous — Hourly Basis .....                                   | per hour \$25.00 |
| Catapillar, per hour when used<br>in conjunction with rig..... | \$11.00          |

Authorized Agents for

## J & R DRILLING COMPANY

We Do All Types of Drilling

Wire, Write or Phone Any Hour Day or Night

|                      |                          |                        |
|----------------------|--------------------------|------------------------|
| <b>DAVE BOWEN</b>    | <b>ALBERT M. JOHNSON</b> | <b>WALTER PETERSON</b> |
| 445 East 3rd South   | 319 Ouray Ave.           | 319 Ouray Ave.         |
| Salt Lake City, Utah | Salt Lake City, Utah     | Salt Lake City, Utah   |
| Phone 4-7589         | Phone 9-9790             | Phone 9-9790           |

AMERICAN SMELTING AND REFINING COMPANY  
WESTERN MINING DEPARTMENT  
LEADVILLE UNIT

Leadville, Colo.  
Feb. 9, 1953

Mr. W. R. Landwehr, Chief Geologist  
Western Mining Dept., A. S. & R. Co.  
600 Pacific National Life Bldg.  
Salt Lake City 1, Utah

LONG HOLE DRILLING  
WEEK-END-SUNDAY AREA  
LEADVILLE, COLORADO

Dear Sir:

I have listed below the details of the drill, the type of ground and the information you should expect to get with a "long hole" drilling program:

Equipment - All of the equipment can be bought from "The Minerals Engineering Co." Grand Junction, Colo.

Drill - Specify a special Long Hole P-99 automatic 4 ft. shell, 4 in. O.D. Drifter. It will include a large water hole water nozzle with a chrome plate section where it contacts the 4" ring gasket in the shank.

Shank - Order 6 - 1-1/4" round alloy special long hole shanks with 100 extra "O" ring gaskets.

Steel Adapter Sleeve - Order at least 2 of these. This connects the 1-1/4" thread to the 1" thread of the regular steel.

Sleeve Connectors - Order 14 more than the number of steel purchased.

Steel - Order at least twice the amount of the longest hole you expect to drill. Steel comes in 4 ft. lengths, 1 in. hex. alloy.

Water Tank - The mine should rig up a small water air pressure tank with plenty of water close by. The best is a small tank with feed and air hoses to the main drill water line. The tank should be rigged with bleed off valves to both air and water. We use a tank full for each 4 ft. steel allowing the tank to fill up while adding another length of steel.

Bits - You can order any size, but if your ground is fairly hard, I would order the following: 3 - 3"; 3 - 2-3/4"; 12 - 2-1/4". The bits are carbide cross-bits and very good.

Procedure - A 2-1/2" collar pipe, 3' long can be used, or, we found that on all plus hole we did not need it to catch cuttings. The machine is set up on a double screw 3-1/2" column and bar mounting. After collaring the hole the machine throttle is turned full open. The steel is fed at a slow rate with ample water at 100 psi pressure. It is important that drill water return is ample to prevent sticking the steel. After each length of steel blowing and washing is essential. Stop drilling if drill water is lost. Drill until the bit becomes dull then change bits. The threads on the bit and last two sections next to the bit should be greased with a special grease made from mixing MoS<sub>2</sub> and cup grease. The rest of the steel connections should be oiled each time they are used. The sleeves or adapters should be examined for wear and looseness and compared with a new connection. They should be thrown away if worn. In case the steel sticks a 24" pipe wrench will break the connections where the molybdenum sulphide grease was applied at the end of the string so that steel loss is practically nil. The steel is rested every other hole and the steel is added end for end, i.e. the first steel drilling one hole is added last on the next hole. The reason 1" steel is used instead of larger sizes is that on long holes the energy transferred through the steel will still be enough to penetrate into the rock. The length of holes drilled depends on the uniformity of the rock. In uniform firm medium to hard rock we have drilled to 200 ft. In soft broken shales and quartz fissuring we can only drill to about 140 ft. I would say 200 ft. is the limit on plus 5° holes; 180 ft. on plus 45° holes; 160 ft. on plus 60° holes. On holes steeper than minus 20° we could not get good samples over 40 ft.

Results - If the hole is washed good between runs and the pay rock does not loosen and salt the sample, I would say that it will give you the same results as a diamond drill. It tells little about structure, but will outline material such as ore bodies and waste rock. The drilling should be watched carefully to obtain the best results.

Costs - We paid our men \$10 for a move or setup, plus 25¢ per ft. for the first 50 ft. and 50¢ per ft. for all over 50 ft. Both men of equal ability can set up and drill 100 ft. plus in 8 hours. Each 4 ft. run was sampled separately. Steel is drilled to 4,000 ft. average then discarded, adapters 2,000 ft, shanks and bits until worn out or broken. In hard ground steel loss will be on a minimum, but lot should be discarded when breakage starts. Our costs are around \$1/ft. total.

Yours very truly,

*J. C. Mitchell*  
J. C. Mitchell

JOM/a

cc: FVRichard

November 26, 1948

Mr. M. W. Cox  
American Smelting and Refining Company  
P. O. Box 440  
Wallace, Idaho

IDAHO, SHOSHONE COUNTY  
MORNING MINE  
DIAMOND DRILLING COSTS

Dear Sir:

I have your letter of November 17, 1948, in which you inquire about certain forms to be used in diamond drilling reports. Apparently it was intended to prepare such a form, but this has not yet been done. We will forward copies to you whenever they are prepared.

Very truly yours,

L. H. HART

LHH/cb

L. H. H.  
NOV 24 1948

AMERICAN SMELTING AND REFINING COMPANY  
WESTERN MINING DEPARTMENT

D. J. POPE, GENERAL MANAGER  
W. R. LANDWEHR, CHIEF GEOLOGIST

November 17, 1948

WALLACE, IDAHO  
P. O. BOX 440

NORTHWESTERN DIVISION  
KEITH WHITING, CHIEF GEOLOGIST

READ AND RETURN

|     |   |  |
|-----|---|--|
| BJP | ✓ |  |
| WRL | ✓ |  |
| JFF | ✓ |  |
| NW  |   |  |
|     |   |  |

Mr. L. H. Hart, Exploration Engineer  
Western Mining Department  
American Smelting and Refining Company  
600 Pacific National Life Building  
Salt Lake City 1, Utah

IDAHO, SHOSHONE COUNTY  
MORNING MINE  
DIAMOND DRILLING COSTS

Dear Sir:

Herewith is a summary of the diamond drilling done at the Morning Mine in 1948.

I believe it was Mr. Landwehr's original intention to furnish these branch offices with a printed form for making such reports. We have never received such a form, but if it is available, would like to have a small supply.

Sincerely yours,

*M. W. Cox*  
M. W. COX

MWC:jm

cc: L.H.Hart 1-(return to Keith Whiting)  
1-(for transmittal to  
WHLoerpabel)

W. R. L.  
NOV 27 1948

*Return to L.H.H. for reply*

*WRL  
Do we have such  
a form?  
No. The idea was  
to compile all data  
for possible use in  
future estimates  
L.H.H.*

Wallace, Idaho  
November 8, 1948

MEMORANDUM

IDAHO, SHOSHONE COUNTY  
MORNING MINE  
DIAMOND DRILLING COSTS

During the period February 5, 1948 to September 30, 1948, four exploratory diamond drill holes totaling 4366 feet were drilled from the lower workings of the Morning Mine. All of this work was done by R. S. McClintock Company, Spokane, Washington on a contract basis at the flat rate of \$4.75 per foot which included labor, diamond bits, and necessary tools. Where drilling became impractical due to loose or caving materials or water courses, reaming, landing casing, and placing cement was done at \$2.75 per foot. The Federal Mining and Smelting Company supplied air and water at the drill site, cut the drill station to sufficient size and supplied necessary core and sludge containers. A sludge sample was taken for every 10 feet of run throughout the entire depth of hole. The drilling is summarized below. Also see attached table.

SUMMARY OF DIAMOND DRILLING COSTS

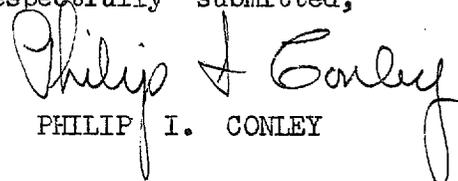
|                           |                   |
|---------------------------|-------------------|
| Number of holes           | 4 <sup>1</sup>    |
| Total feet drilled        | 4366 <sup>1</sup> |
| Cost per foot drilled     | \$ 4.75           |
| Reaming, 19'- EX @ \$2.75 | \$ 52.25          |
| Total Cost                | \$ 20,843.00      |

F.M.& S.Co. Expense (Estimated)

Preparing 3 drill stations,  
core and sludge boxes

|       |               |
|-------|---------------|
| Labor | \$ 600.00     |
| Other | <u>250.00</u> |
| Total | \$ 850.00     |

Respectfully submitted,

  
PHILIP I. CONLEY

PIC: jm

DIAMOND DRILLING - MORNING MINE  
1948

| HOLE No. | LOCATION   | BEAR.& INCL. | DEPTH | SIZE  | AVERAGE RECOVERY | COST/FT. (Contract) | REAMING, CEMENTING etc. | TOTAL COST | MATERIAL DRILLED  | REMARKS   |
|----------|--|--------------|-------|---|------------------|---------------------|-------------------------|------------|---|---|
| 1        | 3850 L.<br>N. Tail<br>Drift<br>from<br>Sta.X-Cut | N35E<br>Flat | 1414' | 0-5' 3½"<br>5'-20' Nx<br>20'-100' Bx<br>100'-1414' Ax | 70%              | \$ 4.75             | -                       | \$6,716.50 | St.Regis Forma-<br>tion. argillaceous<br>qtz'te & argillite<br>weak to moderate<br>shearing through<br>out. A few fairly<br>strong fault zones                        | Hole caved at<br>1040 and was<br>abandoned<br>Bottom of hole<br>inclined -5°  |
| 2        | 4050 L<br>640' W<br>of Sta.<br>X-Cut             | N30E<br>Flat | 451'  | 0'-5' 3½"<br>5'-20' Nx<br>20'-60' Bx<br>60'-451' Ax   | 71%              | \$ 4.75             | -                       | \$2,142.25 | Revelt Formation.<br>pure,hard,qtz'te<br>a little impure<br>qtz'te, local<br>weak shearing  | Bottom of<br>hole inclined<br>+ 2°  |
| 3        | 4050L<br>640' W<br>of Sta.<br>X-Cut              | S45W<br>Flat | 1000' | 0'-5' 3½"<br>5'-20' Nx<br>20'-82' Bx<br>82'-1000' Ax  | 53%              | \$ 4.75             | 19@ \$2.75              | \$4,802.25 | Revelt Formation.<br>pure qtz'te con-<br>taining broad<br>zones of silici-<br>fied qtz'te. A<br>few shear or<br>fault zones,but<br>mostly undisturbed<br>and massive. | Recovery poor<br>through very<br>hard zones.<br>Hole inclined<br>+ 2° at 500'<br>+ 3° at 1000'                                  |
| 4        | 2650 L<br>N. Face<br>Of Sta.<br>X-Cut            | N40E<br>Flat | 1501' | 0 -20' Nx<br>20'-70' Bx<br>70'-1501' Ax               | 45%              | \$4.75              | -                       | \$7,129.75 | St. Regis Formation.<br>argillite & sandy<br>argillite,a few<br>fairly strong<br>fault zones  | Narrow zones<br>of loose<br>caving ground<br>made deep<br>drilling<br>difficult<br>Hole inclined<br>-5° at 750'<br>-8° at 1000' |

\*\*Detail logs are on file at Wallace Office

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

April 9, 1948

AIR MAIL

Mr. W. R. Landwehr, Chief Geologist  
Western Mining Department  
Salt Lake City Office

| MINING DEPARTMENT |        |          |            |             |      |
|-------------------|--------|----------|------------|-------------|------|
| Salt Lake Office  |        |          |            |             |      |
| Received          |        | by       |            |             |      |
| APR 12 1948       |        | Sundance |            |             |      |
| Note              | Handle | Info.    | Adv. Exam. | Adv. Advise | File |
|                   |        |          |            |             |      |

DIAMOND DRILLING COSTS

Dear Sir:

I wish to acknowledge, with thanks, Mr. Whiting's several letters which he has forwarded from time to time on diamond drilling costs and methods.

Inasmuch as we, here, have not forwarded any similar data to Mr. Whiting, I would like to note for him that we will forward this information as soon as our present exploration project is completed. Our Tejon project, - and of course the Asarco which is attached to the Ground Hog Unit, - is the only exploratory drilling which we have had under way since the receipt of your instructions in this regard under date of September 18th, 1947.

Incidentally, all our exploratory diamond drilling here is contracted to Sprague & Henwood of Scranton, Pennsylvania and at a flat rate which varies only with the depth of hole and with major changes in geographic location.

Very truly yours,



L. KENNETH WILSON

LKW:ar

cc: DJPope  
KWhiting

W. R. L.  
APR 12 1948

March 22, 1948

Mr. Keith Whiting, Chief Geologist  
Northwestern Mining Division  
American Smelting & Refining Co.  
Box 440  
Wallace, Idaho

IDAHO, SHOSHONE COUNTY  
HIGHLANDS-AURORA MINE  
DIAMOND DRILLING COSTS

Dear Sir:

Thanks for the diamond drilling costs data on the High-lands-Aurora mine submitted with your letter of March 19. Apparently under favorable conditions short holes could be drilled on company time much more cheaply than on contract.

Very truly yours,

W. R. Landwehr

WRL:si

AMERICAN SMELTING AND REFINING COMPANY

WESTERN MINING DEPARTMENT

D. J. POPE, GENERAL MANAGER

W. R. LANDWEHR, CHIEF GEOLOGIST

NORTHWESTERN DIVISION  
KEITH WHITING, CHIEF GEOLOGIST

March 19, 1948.

WALLACE, IDAHO  
P. O. BOX 440

Mr. W. R. Landwehr, Chief Geologist,  
Western Mining Department,  
American Smelting and Refining Company,  
600 Pacific National Life Building,  
Salt Lake City 1, Utah.

| MINING DEPARTMENT |        |      |            |            |      |
|-------------------|--------|------|------------|------------|------|
| MAR 22 1948       |        |      | Suspense   |            |      |
| Note              | Handle | Rev. | And Return | And Advise | File |
|                   |        |      |            |            |      |

IDAHO, SHOSHONE COUNTY  
HIGHLANDS-AURORA MINE  
DIAMOND DRILLING COSTS

Dear Sir:

Herewith is cost data recently worked up by Mr. A. P. Nelson, pertaining to the drilling done at the Highlands-Aurora last summer.

I have added a few comments regarding the rock encountered.

Yours very truly,

*Keith Whiting*  
KEITH WHITING.

KW:MVE

Enclosure

cc-LKWilson, Tucson, Arizona - with enclosure  
JEBerg - with enclosure  
RWLottridge - with enclosure

W. R. L.  
MAR 22 1948

IDAHO, SHOSHONE COUNTY  
HIGHLANDS-AURORA MINE  
DIAMOND DRILLING COSTS

In conjunction with drifting and crosscutting on the 1000 Level at the Highlands-Aurora Mine in 1947, three short horizontal holes were drilled to test the walls for possible parallel vein structures. The lengths of the holes were 137', 67' and 183', or a total of 387'.

The rock penetrated was St. Regis Quartzite of Algonkian Age. The quartzites varied from quite pure to moderately sericitic. Fracturing was strong locally, but was generally moderate to weak. In the first two holes, a heavy flow of water was encountered, the pressure in the second hole was so great that the hole had to be discontinued.

The work was done by the Company on a straight time basis.

The first five feet of each hole was AX, the remainder was EX.

KEITH WHITING.

KW:MVE

COST OF DIAMOND DRILLING AT THE HIGHLANDS-AURORA MINE

(Excluding Power Costs)

Total Footage Drilled . . . . . 387 Feet

|                          | <u>Total</u>  | <u>Per Foot</u> |
|--------------------------|---------------|-----------------|
| Labor Cost . . . . .     | \$ 862.80     | \$ 2.23         |
| Bit Cost . . . . .       | 534.92        | 1.38            |
| Rod Cost . . . . .       | <u>15.00</u>  | <u>0.04</u>     |
| <br>Total Cost . . . . . | <br>\$1412.72 | <br>\$ 3.65     |

COST PER HOLE

Hole No. 1 - Drilled through strong to moderately fractured quartzite - 45% core recovery. Hole developed an estimated 175 lbs. per sq. in. water pressure. D.D. machine broke down twice.

Footage Drilled . . . . . 137 Feet

|                          | <u>Total</u>  | <u>Per Foot</u> |
|--------------------------|---------------|-----------------|
| Labor Cost . . . . .     | \$ 357.00     | \$ 2.61         |
| Bit Cost . . . . .       | 299.74        | 2.19            |
| Rod Cost . . . . .       | <u>4.50</u>   | <u>0.03</u>     |
| <br>Total Cost . . . . . | <br>\$ 661.24 | <br>\$ 4.83     |

Hole No. 2 - Drilled through strong to moderately fractured quartzite - 58% core recovery. Hole developed an estimated 350 lbs. per sq. in. water pressure. D.D. machine was too light to drill against such high water pressure and broke down repeatedly.

Footage Drilled . . . . . 67 Feet

|                          | <u>Total</u>  | <u>Per Foot</u> |
|--------------------------|---------------|-----------------|
| Labor Cost . . . . .     | \$ 287.60     | \$ 4.29         |
| Bit Cost . . . . .       | 103.87        | 1.55            |
| Rod Cost . . . . .       | <u>10.50</u>  | <u>0.15</u>     |
| <br>Total Cost . . . . . | <br>\$ 401.97 | <br>\$ 5.99     |

Hole No. 3 - Drilled through moderate to slightly fractured quartzite - 77% core recovery. Hole developed no water.

Footage Drilled . . . . . 183 Feet

|                          | <u>Total</u>         | <u>Per Foot</u>    |
|--------------------------|----------------------|--------------------|
| Labor Cost . . . . .     | \$ 218.00            | \$ 1.19            |
| Bit Cost . . . . .       | 131.31               | 0.72               |
| Rod Cost . . . . .       | <u>-</u>             | <u>-</u>           |
| <br>Total Cost . . . . . | <br><u>\$ 349.51</u> | <br><u>\$ 1.91</u> |

February 19, 1948

Mr. Keith Whiting, Chief Geologist  
Northwestern Mining Division  
American Smelting & Refining Co.  
Box 1440  
Wallace, Idaho

DIAMOND DRILLING COSTS

Dear Sir:

Thank you for the data on diamond drilling at the Frisco mine, which were transmitted with your letter of February 4. As soon as some of us find time we will furnish you with copies of the cost of the drilling that we have been doing in this division.

Very truly yours,

W. R. Landwehr

WRL:si

AMERICAN SMELTING AND REFINING COMPANY  
WESTERN MINING DEPARTMENT  
D. J. POPE, GENERAL MANAGER  
W. R. LANDWEHR, CHIEF GEOLOGIST

February 4, 1948

NORTHWESTERN DIVISION  
KEITH WHITING, CHIEF GEOLOGIST

WALLACE, IDAHO  
P. O. BOX 440

Mr. W. R. Landwehr, Chief Geologist  
Western Mining Department  
American Smelting & Refining Co.  
600 Pacific National Life Bldg.  
Salt Lake City 1, Utah

Dear Sir:

DIAMOND DRILLING COSTS ←

Herewith is data on a diamond drill pro-  
ject recently completed at the Frisco Mine.

Very truly yours,

*Keith Whiting*  
KEITH WHITING

KW:MB

cc:LKWilson-Tucson, Ariz.  
JE Berg  
RW Lottridge

Encls.

W. R. L.  
FEB 7 1948

| MINING DEPARTMENT |        |           |      |            |      |
|-------------------|--------|-----------|------|------------|------|
| Salt Lake Office  |        |           |      |            |      |
| Received          |        | My Attn:  |      |            |      |
| FEB 6 1948        |        | Suspense: |      |            |      |
| Note              | Handle | Rev.      | File | And Advise | File |
|                   |        |           |      |            |      |

IDAHO, SHOSHONE COUNTY  
FEDERAL MINING & SMELTING CO.  
FRISCO MINE  
DIAMOND DRILLING COSTS

The drilling program carried on in November and December, 1947 was comprised of three short horizontal holes from mine workings to test the walls for possible nearby veins. The lengths of the holes were 153', 160' and 131', totaling 444'. The rock penetrated was Burke quartzite of Algonkian age. The quartzites vary from fairly pure to argillaceous. Fracturing was generally moderate, although loose ground requiring cementing was encountered in several places.

The work was done by the Company on a straight time basis.

The hole size was EX with the exception of the first 5' of each hole, which was AX.

The average core recovery for the three holes was 84.2%.

DIAMOND DRILLING COSTS AT FRISCO MINE

Federal Mining & Smelting Co.  
Wallace, Idaho

November, 1947 - December 1947

Summary of Diamond Drilling Costs

|                         |                                |
|-------------------------|--------------------------------|
| Number of holes         | 3                              |
| Total footage drilled   | 444'                           |
| Total cost of drilling  | \$1,253.60 (direct costs only) |
| Cost per foot of hole   | \$2.82                         |
| Average footage per bit | 34.2'                          |

Breakdown of Direct Costs

|                                    |             |
|------------------------------------|-------------|
| Driller's wages and expenses ..... | \$788.46    |
| Helper's wages .....               | 50.95       |
| Diamond cost (13 bits) .....       | 322.46      |
| Drill rental .....                 | 25.00       |
| Wrenches .....                     | 7.01        |
| Cement .....                       | 4.20        |
| Repair parts .....                 | 0.44        |
| Compressed air and water .....     | 52.65       |
| Oil .....                          | <u>2.43</u> |
| Total cost .....                   | \$1,253.60  |

American Smelting and Refining Co.  
Box 521  
Ouray, Colorado

December, 3, 1947

Mr. J. Fred Johnson, Manager of Operations  
American Smelting and Refining Co.  
700 Pacific Nat'l Life Bldg.  
Salt Lake City, 1, Utah

Dear Sir:

Enclosed herewith is a report on the diamond drilling costs for the last twenty days in October. This is in accord with my proposal of an Engineering and Equipment Department of several months ago. This is the type of cost record we should have for the various projects and phases of work.

The enclosed cost record is as detailed as I could possibly make it with the information on hand. The information entailed in this report is interesting from many standpoints.

Continued reports such as this may be a valuable asset in future operations or projects.

Very truly yours,

R. E. MIERITZ

R. E. Mieritz

ccW. R. Landwehr.

W. R. L.  
JUN 3 1948

| MINING DEPARTMENT |        |      |            |            |      |
|-------------------|--------|------|------------|------------|------|
| Salt Lake Office  |        |      |            |            |      |
| Received          |        |      | By         |            |      |
| DEC 4 1947        |        |      | Suspense:  |            |      |
| Note              | Handle | Rev. | And Return | And Advise | File |
|                   |        |      |            |            |      |

Red Mountain Area  
Ouray County, Colorado

DIAMOND DRILL COSTS  
October 11 to 31, 1947

DISCUSSION

The following diamond drill costs are based on the information available at the project. Many small items, although would add materially to cost, have been omitted principally because of the great amount of research involved, time for which I do not have at this time.

A. Prorated Costs:

Items under this cost category consist chiefly of preparing the diamond drill station and the core boxes for the estimated 2000 feet of drilling. This drilling being done from the No. 1 Drift. Perhaps it would be better to break the costs down on the footage basis for each item, but for simplicity I have lump summed the diamond drill station costs. Here again the time factor.

It is interesting to note the cost of the drill station alone is roughly 17% of the increased cost above the contract price, in this particular instance. One would therefore conclude that more drilling done from the one station would reduce cost. This alone could be a determining factor in future placement of holes.

B. Direct Costs:

Under this category I have placed the actual contract price of footage drill plus other contract items, power consumed in drilling, labor involved, and depreciation on equipment which is directly instrumental for drilling.

The b., power and c., labor items under this category constitute 67% of the increased cost above the contract price. The power cost was divided equally between the drift work and the drilling. When drift work is completed, the power bill will be totally consumed in the diamond drill costs, however, with an additional drill in the No 2 drift it will still be halved for each drill. It will however be interesting to watch and compare the costs for the two drills.

C. Indirect costs.

The items listed here are merely those of my time and expense account involved. I realize there are many indirect costs which should appear here, but I do not have the information to compute this additional cost. Such items as Managers time, and expenses, Salt Lake office over head, some of Denver office overhead, etc should be included to make the indirect costs mean anything.

RED MOUNTAIN AREA  
OURAY COUNTY, COLORADO

DIAMOND DRILL COSTS

October 11 to 31, 1947

by

R. E. Mieritz

| MINING DEPARTMENT |        |      |            |            |      |
|-------------------|--------|------|------------|------------|------|
| Received          |        |      | My Attn.   |            |      |
| DEC 4 1947        |        |      | Suspense:  |            |      |
| Note              | Handle | Rev. | And Return | And Advise | File |
|                   |        |      |            |            |      |

Red Mountain Area  
 DIAMOND DRILL COSTS  
 October 11 to 31, 1947

PRORATED COSTS

Based on 2000 feet of drilling from No. 1 drill station

a. Drill Station

|                               |          |                              |  |          |
|-------------------------------|----------|------------------------------|--|----------|
| Advance,                      | 20 ft. @ | \$12.00 equals               |  | \$240.00 |
| Slabbing                      | 24 ft. @ | 6.00                         |  | 144.00   |
| Ex. muck                      | 20 ft @  | 3.75                         |  | 75.00    |
| Timber                        | 4 sets @ | 10.00                        |  | 40.00    |
| Comp. time                    | 4 hrs @  | 1.14                         |  | 4.56     |
| Overtime                      |          |                              |  | 50.38    |
| Compressor labor              |          |                              |  |          |
| $\frac{1}{2}$ x 4 days        | @        | 9.60                         |  | 19.20    |
| Shop labor                    |          |                              |  |          |
| $\frac{1}{2}$ x 4 days        | @        | 9.60                         |  | 19.20    |
| Power, $\frac{1}{2}$ x 4 days | @        | 19.52                        |  | 39.04    |
| Oil, bits, steel, etc.        |          | estimated                    |  | 5.00     |
| Timber, 4 sets @              |          | 107.2                        |  |          |
| board feet/ set               |          |                              |  |          |
| is 428.8 b. ft @              |          | 6.25/ 100 ft.                |  | 26.76    |
| Lagging, 24 pieces @          |          | 15.2                         |  |          |
| board ft/ piece               |          |                              |  |          |
| is 364.8 b. ft @              |          | 6.25/100 ft.                 |  | 22.80    |
| Powder, 156 lbs               | @        | 13.62/c lbs.                 |  | 21.85    |
| Fuse, 416 ft.                 | @        | 1.06/ c ft.                  |  | 4.41     |
| Freight on timber, etc        |          |                              |  |          |
| 2921 lbs @                    |          | \$.23 $\frac{1}{2}$ /100 lbs |  | 6.57     |
|                               |          |                              |  | \$718.76 |
|                               |          |                              |  | \$113.56 |
|                               |          |                              |  | \$ 1.14  |

\$ 114.70

Red Mountain Area

DIAMOND DRILL COSTS  
October 11 to 31, 1947

DIRECT COSTS

|  |  |                                |
|--|--|--------------------------------|
| a. Contract                                    | 316 ft @ 3.75/ft. equals   | <del>\$1185.00</del> \$1185.00 |
|  | 6 Hrs delay @ 4.75   | 29.50 28.50                    |
| b. Power                                       | $\frac{11 \text{ days}}{2} \times \$19.52$ (10/11 to 22)                         | 107.36                         |
|  | Power bill from 9/22 to 10/22 was \$585.66                                       |                                |
|  | $\frac{9 \text{ days}}{2} \times \$23.04$ (10/22 to 31) "                        | 601.00 103.68                  |
|  | Power bill from 10/22 to 11/22 was \$691.09                                      |                                |
| c. Labor                                       |  |                                |
|  | Hauling water 14 days @ \$9.12   | 127.68                         |
|  | Compressor $\frac{1}{2} \times 14$ days @ 9.60                                   | 67.20                          |
|  | Shop man $\frac{1}{2} \times 14$ days @ 9.60                                     | 38.40                          |
| d. Depreciation on Equipment, Compressor, Etc. |  |                                |
|  | $\frac{1}{2}\%$ / mo. on \$10,000 initial cost of                                |                                |
|  | equipment, $\frac{1}{2}\% \times 10,000 \times \frac{1}{2} \times \frac{20}{30}$ | 16.67                          |

---

\$1664.49

Red Mountain Area  
DIAMOND DRILL COSTS  
October 11 to 31, 1947

INDIRECT COSTS

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|   |                              |          |
|---|------------------------------|----------|
| a. Supervision, Supt.<br>1/3 time of Supt.          | @ \$375.00 x $\frac{20}{30}$ | \$ 83.33 |
| b. Expese account<br>$\frac{1}{2}$ of October Acct. | @ \$155.95 x $\frac{20}{30}$ | \$ 51.98 |

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\$ 135.31

Red Mountain Area

DIAMOND DRILL COSTS  
October 11 to 31, 1947

CALCULATION OF COSTS

Includes prorated, direct and indirect Costs

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|                   |           |
|-------------------|-----------|
| a. PRORATED COSTS | \$ 114.70 |
| b. DIRECT COSTS   | \$1664.49 |
| c. INDIRECT COSTS | \$ 135.31 |
|                   | <hr/>     |
|                   | \$1914.50 |

Actual cost per foot drilled  
for the last 20 days in October  
is calculated as follows:

$$\frac{\$ 1914.50}{316 \text{ ft}} \text{ equals } \$6.06/\text{r foot drill}$$

July 18, 1917

Mr. J. H. Courtwright  
P. O. Box 905  
Leadville, Colorado

DIAMOND DRILLING COSTS

Dear Sir:

We have compiled a summary of diamond drilling data, including direct costs for the Garbutt, Eclipse and Kokomo projects, but lack a description of the formations drilled and their physical characteristics. I would appreciate it if you would prepare such a description, which can be attached to the cost summary and mailed to the other departments for their information in estimating the costs of projects in the future.

I am enclosing a copy of each of the summaries. You will note that only direct costs are shown, as it is impossible to obtain the overhead from our records. Therefore, you need only to describe those factors which affect direct costs.

Very truly yours,

W. R. Landwehr

WRL:si

September 18, 1947

Mr. Keith Whiting  
American Smelting & Refining Company  
P. O. Box 440  
Wallace, Idaho

Mr. L. K. Wilson  
American Smelting & Refining Company  
Box 2229  
Tucson, Arizona

Gentlemen:

In order to build a record of diamond drilling costs for use in estimating the cost of future projects, I wish you would, at the completion of each project, have a summary made of the cost of drilling. The accuracy of the summary, and the detail of the breakdown, should be commensurate with the available records.

One copy of the summary should be sent to me, and one to the Chief Geologist of the other division.

Forms for tabulating costs will be forwarded as soon as available. Upon receipt, or use, thereof please call to my attention any improvements that you think can be made.

There are enclosed herewith for your file summaries of the cost of drilling at Kokomo, Garbutt shaft, Eclipse shaft, and Pacific mine. You will note that overhead and capital expenditures are not included. They were not readily available from the mine records.

Very truly yours,

W. R. Landwehr

WRL:si

September 11, 1947

Boyles Bros. Drilling Company  
1321 South Main Street  
Salt Lake City 4, Utah

COLORADO, LEADVILLE  
IBEX-SUNDAY AREA  
DIAMOND DRILLING

Gentlemen:

Referring to your letter proposal of September 10th, would advise you may proceed with diamond drilling in the Garibaldi tunnel as instructed by Mr. Zelenkov and Mr. Courtright, under the proposed terms. It is my understanding that the A. S. & R. Company is to furnish compressed air and water for diamond drilling, but that Boyles Bros. will furnish everything else, and that its employees will be protected by compensation insurance to the intent that American Smelting and Refining Company will be protected from any liability in the work by Boyles Bros. employees.

Yours very truly,

J. Fred Johnson

JFJ:si

cc: D.J.Pope  
W.R.Landwehr  
S.B.Zelenkov  
J.H.Courtright  
E.J.Kelly

W. R. L.  
SEP 12 1947

BOYLES BROS. DRILLING COMPANY  
1321 South Main Street  
Salt Lake City 4, Utah

September 10, 1947

American Smelting & Refining Co.  
Pacific National Life Building  
Salt Lake City, Utah

Attention: J. Fred Johnson

Gentlemen:

In accordance with your recent request, we submit the following proposal for the contemplated drilling at the Garibaldi tunnel property, Leadville, Colorado:

We will undertake the drilling of holes up to 1,000 feet at a flat rate of \$4.55 per linear foot. Planned procedure is to start with size BX and to drill to size AX to such depths as may be deemed advisable, and then case and complete all holes with size EX.

Cementing of holes as required will be done on the basis of \$4.75 per crew hour, plus such cement or cement substitutes as may be required. Should deflecting of holes be required, such work will be performed on the above crew hour basis, plus such materials consumed during deflecting operations.

Should the foregoing proposal meet with your approval we would appreciate your acceptance by letter and operations can be underway within ten days after notice to proceed.

Yours very truly,

/s/ R. T. Goldsworthy

RTG:bg

AMERICAN SMELTING AND REFINING COMPANY

WESTERN MINING DEPARTMENT

P. O. BOX 905

LEADVILLE, COLORADO

August 22, 1947

J. H. COURTRIGHT  
RESIDENT GEOLOGIST

W.R.Landwehr, Chief Geologist,  
American Smelting and Refining Co.  
700 Pacific National Life Bldg.  
Salt Lake City, Utah.

|                                       |       |     |           |            |      |
|---------------------------------------|-------|-----|-----------|------------|------|
| MINING DEPARTMENT<br>Salt Lake Office |       |     |           |            |      |
| Received                              |       |     | By / Date |            |      |
| AUG 25 1947                           |       |     |           |            |      |
| Description:                          |       |     |           |            |      |
| Note                                  | Trans | Ret | Ad        | And Advise | File |
|                                       |       |     |           |            |      |
| <u>DIAMOND DRILLING COSTS</u>         |       |     |           |            |      |
| <u>DESCRIPTION OF ROCK TYPES</u>      |       |     |           |            |      |

Dear Sir:

In reply to your letter of July 18, 1947, regarding the physical characteristics of rocks drilled in the Garbutt, Eclipse and Kokomo areas, I have the following data and comments:

Eclipse Shaft. Total feet drilled: 2218

|              |                             |                  |                 |                |
|--------------|-----------------------------|------------------|-----------------|----------------|
| <u>Shale</u> | <u>Sand stone and Grits</u> | <u>Limestone</u> | <u>Porphyry</u> | <u>Breccia</u> |
| 27%          | 29%                         | 8%               | 24%             | 5%             |

The percentage not accounted for represents 100% core losses, gouges, etc. The shale ranges from soft to medium hard; is generally argillaceous, sometimes calcareous and/or carbonaceous. The ss and grits vary from medium hard dense argillaceous sandstones to hard dense rather coarse quartzitic arkose grits, with a minor amount of very hard almost pure quartzite. The limestone is mainly a medium to fine crystalline dolomite. The breccia is a mixture of porphyry and shale fragments. In general the rocks are firmly consolidated, ranging in age from Pre-Cambrian to Middle Pennsylvanian. The porphyry is a moderately hard dense monzonite, medium to fine grained, with variable amounts of silicification and hydrothermal alteration. Numerous faults and slips are present in all rock formations. The drilling rate was on the average faster and the bit consumption lower in the porphyry than in the sediments.

Garbutt Shaft. Total feet drilled: 3955

|              |                           |                  |                 |                  |
|--------------|---------------------------|------------------|-----------------|------------------|
| <u>Shale</u> | <u>Sandstone and Grit</u> | <u>Limestone</u> | <u>Porphyry</u> | <u>Sulphides</u> |
| 23%          | 27%                       | 5%               | 38%             | 3%               |

The rock types and physical conditions of this area are essentially the same as those of the Eclipse area, with the exception that in and near the sulphide zones in the Garbutt considerable jasperoid (siliceous replacement of dolomite) with associated vugs and cavities was encountered. This material is exceptionally difficult to drill and to make recoveries in.

Bit consumption was unusually high in the Garbutt, higher in the Eclipse. This was in part due to the use of worn-out leaky rods, resulting in low water pressures at the bit face.

Kokomo

Approximately 90% of the footage was in sandstones and grits of the Pennsylvanian Mareon formation. The sandstones are generally medium hard, medium to fine grained, argillaceous and micaceous. The grits are medium hard, coarse to conglomeritic, arkose and micaceous. Numerous soft shale and mudstone beds are present. Rather dense medium hard limestone <sup>with sulphide</sup> accounts for about 5% of the footage. Glaciofluvial wash, composed of sand, pebbles and coarse angular boulders makes of the remaining 5%. A few dikes and sills of porphyry were encountered, but represent a negligible percentage of the total footage drilled.

Yours Very Truly,

*J. H. Courtright*  
J.H.Courtright

DIAMOND DRILLING COSTS AT KOKOMO, COLORADO

July, 1946 - May, 1947

Diamond drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |             |
|------------------------|-------------|
| Number of holes        | 51          |
| Total cost             | \$62,292.38 |
| Total feet drilled     | 15,025'     |
| Cost per foot drilled  | \$ 4.1459   |
| Average length of hole | 294.6'      |

Breakdown of Total Cost W/r Length of Hole

|                        |             |             |             |             |
|------------------------|-------------|-------------|-------------|-------------|
| Number of Holes        | 8           | 22          | 13          | 8           |
| Length of Holes        | 0-200'      | 200'-300'   | 300'-400'   | +400'       |
| Total Cost             | \$ 5,527.30 | \$22,233.98 | \$17,431.10 | \$17,100.00 |
| Feet Drilled           | 1,370'      | 5,507'      | 4,286'      | 3,862'      |
| Cost per foot drilled  | \$ 4.0345   | \$ 4.0374   | \$ 4.0669   | \$ 4.4277   |
| Average length of hole | 171.25'     | 250.31'     | 329.69'     | 482.75'     |

Breakdown of Total Cost

| <u>Item</u>         | <u>Cost</u> | <u>Cost per<br/>foot drilled</u> | <u>% of total<br/>cost</u> |
|---------------------|-------------|----------------------------------|----------------------------|
| Drilling 15,025'    | \$59,465.45 | \$3.9578                         | 95.46                      |
| Reaming 1166.5'     | 1,890.73    | .1258                            | 3.03                       |
| Cementing           | 506.50      | .0337                            | 0.82                       |
| Casing left in hole | 23.00       | .0016                            | 0.04                       |
| Deflections         | 405.70      | .0270                            | 0.65                       |
| TOTAL               | \$62,292.38 | \$4.1459                         | 100.00                     |

Breakdown of Drilling

| <u>Item</u> | <u>Total<br/>feet drilled</u> | <u>Cost per<br/>foot (rate)</u> | <u>% of<br/>Total Cost</u> | <u>% of Drilling<br/>Cost</u> | <u>Cost</u> |
|-------------|-------------------------------|---------------------------------|----------------------------|-------------------------------|-------------|
| S.P.        | 1335'                         | \$4.50                          | 9.64                       | 10.10                         | \$6,007.50  |
| BX          | 392'                          | 3.90                            | 2.45                       | 2.58                          | 1,528.50    |
| AX          | (11488'                       | 3.90                            | ( 73.59                    | ( 77.08                       | ( 45,838.50 |
|             | 283'                          | 4.35                            |                            |                               |             |
|             | 580'                          | 3.75                            | ( 3.83                     | ( 4.01                        | (* 2,385.60 |
| EX          | ( 49'                         | 4.10                            |                            |                               |             |
|             | 578'                          | 3.75                            | ( 5.95                     | ( 6.23                        | ( 3,705.00  |
| EXE         | ( 375'                        | 4.10                            |                            |                               |             |
| TOTAL       | 15,025'                       |                                 | 95.46                      | 100.00                        | **62,292.38 |

\* includes \$9.75 overcharge  
 \*\* figure is \$1.00 too high

Breakdown of Reaming

| <u>Item</u> | <u>Total feet<br/>Reamed</u> | <u>Cost per<br/>foot (rate)</u> | <u>% of total<br/>cost</u> | <u>% of Ream-<br/>ing Cost</u> | <u>Cost</u>   |
|-------------|------------------------------|---------------------------------|----------------------------|--------------------------------|---------------|
| AX & BX     | (889.5'<br>(164'             | \$1.65<br>1.68                  | 2.79<br>.                  | 91.93                          | \$1,738.18    |
| EXE         | <u>113'</u>                  | 1.35                            | <u>0.24</u>                | <u>8.07</u>                    | <u>152.55</u> |
| TOTAL       | 1166.5                       |                                 | 3.03                       | 100.00                         | \$1,890.73    |

COLORADO, SUMMIT COUNTY  
KOKOMO DISTRICT  
DIAMOND DRILLING COSTS

Approximately 90% of the footage was in sandstones and grits of the Pennsylvanian Maroon formation. The sandstones are generally medium hard, medium to fine grained, argillaceous and micaceous. The grits are medium hard, coarse to conglomeritic, arkose and micaceous. Numerous soft shale and mudstone beds are present. Rather dense, medium hard limestone and sulfide account for about 5% of the footage. Glaciofluvial wash, composed of sand, pebbles and coarse, angular boulders makes up the remaining 5%. A few dikes and sills of porphyry were encountered, but represent a negligible percentage of the total footage drilled.

DIAMOND DRILLING COSTS AT PACIFIC MINE

April - May, 1947

Diamond drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |            |
|------------------------|------------|
| Number of holes        | 11         |
| Total cost             | \$6,695.40 |
| Total feet drilled     | 1111'      |
| Cost per foot drilled  | \$ 4.7451  |
| Average length of hole | 128.27'    |

Breakdown of Total Cost

| <u>Item</u>                               | <u>Cost</u>   | <u>Cost per foot drilled</u> | <u>% of total cost</u> |
|---|---------------|------------------------------|------------------------|
| Drilling 1111'                            | \$6,339.20    | \$4.4927                     | 94.68                  |
| Reaming 129'                              | 229.50        | 0.1627                       | 3.43                   |
| Cementing 26 hrs. @<br>\$4.50 plus cement | <u>126.70</u> | <u>0.0897</u>                | <u>1.89</u>            |
| TOTAL                                     | \$6,695.40    | \$4.7451                     | 100.00                 |

Breakdown of Drilling

| <u>Bit Type</u> | <u>Feet drilled</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|---------------------|----------------------|---------------|
| NX              | 13                  | \$5.10               | \$ 66.30      |
| BX              | 296                 | 5.10                 | 1,371.90      |
| AX              | 981                 | 4.40                 | 4,316.40      |
| EX              | <u>118</u>          | 3.95                 | <u>584.60</u> |
| TOTAL           | 1111                |                      | \$6,339.20    |

Breakdown of Reaming

| <u>Bit Type</u> | <u>Feet reamed</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|--------------------|----------------------|---------------|
| AX              | 37'                | \$2.10               | \$ 77.70      |
| EX              | <u>92'</u>         | 1.65                 | <u>151.80</u> |
| TOTAL           | 129'               |                      | \$229.50      |

Diamond losses and deflecting costs below are for holes not otherwise included in the above figures. If these diamond losses and deflecting costs are included, the total cost is increased to \$7,213.49 and the cost per foot is increased to \$5.1123

Summary of Diamond Losses and Deflectings

| <u>Item</u>                          | <u>Costs</u>  |
|--------------------------------------|---------------|
| Setting charges 4AX @ \$7.75         | \$31.00       |
| Diamonds 22.05 cts. Congo @ \$3.75 ) | 127.09        |
| 6.00 cts. Bortz @ \$7.40 )           |               |
| Deflectings 80 hrs. @ \$4.50         | <u>360.00</u> |
| TOTAL                                | \$518.09      |
| Cost per foot                        | \$ 0.3672     |

NOTE:

In general, this was a difficult diamond drilling project. The work was first started with a company operated drill, but this proved expensive and unsatisfactory because of the many problems involved. Therefore, after one hole had been completed, it was decided to contract the remaining work. Boyle Bros Drilling Co. received the contract.

All of the drilling was done in the Bayhorse dolomite formation - a series of massive, dolomitic limestones containing numerous vugs, open fissures and occasional chert lumps. The numerous openings made it impossible to get a consistent water return, particularly through the ore zone, and sludge samples were not taken, except in special cases.

The mineralized zone consisted of a fissure filling of soft oxide ore separated by ribs of hard quartz. This made it difficult to get a good core recovery through the ore zone, even though pulls were made every foot or 18 inches. Face discharge bits were tried through the ore zone, but these proved less effective than the regular bits with core springs. This was probably due to the interference of the hard quartz ribs. AX drilling gave a much higher percentage of core recovery than EX; consequently, every effort was made to reach the ore zone with as large a bit as possible.

DIAMOND DRILLING COSTS AT GARBUTT SHAFT, COLORADO

May - November, 1946

The drilling was done on a cost plus \$1.00 per foot drilled basis. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

| <u>Item</u>  | <u>Cost</u>     | <u>Cost per ft.<br/>drilled</u> | <u>% of total<br/>cost</u> |
|--|-----------------|---------------------------------|----------------------------|
| Labor  | \$10,566.41     | \$3.2622                        | 50.30                      |
| Payroll taxes, Workman's<br>compensation insurance | 594.02          | 0.1837                          | 2.83                       |
| Supplies   | 5,706.66        | 1.7619                          | 27.17                      |
| Express, freight,<br>Tel. and Tel.                 | 98.80           | 0.0304                          | 0.47                       |
| R. F. Durfee, expense acct.                        | 168.12          | 0.0517                          | 0.80                       |
| Bit setting charges                                | 632.65          | 0.1953                          | 3.01                       |
| Driller's fee                                      | <u>3,239.00</u> | <u>1.0000</u>                   | <u>15.42</u>               |
| TOTAL  | \$21,005.66     | \$6.4852                        | 100.00                     |

D. D. GARBUTT SHAFT      MAY - NOVEMBER, 1946

Diamond Drilling Costs by Item and Month With Monthly Comparison of Costs to Feet Drilled

| <u>Month</u>  | <u>Labor</u>       | <u>Payroll taxes,<br/>Workman's<br/>Comp. Ins.</u> | <u>Supplies</u>   | <u>Express<br/>Tel. &amp; Tel.</u> | <u>R.F.Durfee<br/>Exp. Acct.</u> | <u>Bit setting<br/>Charges</u> | <u>Driller's<br/>fee (\$1<br/>per foot)</u> | <u>Feet<br/>drilled</u> | <u>Cost Per<br/>Month</u> | <u>Cost per<br/>foot drilled</u> |
|---------------|--------------------|--|-------------------|------------------------------------|----------------------------------|--------------------------------|---|-------------------------|---------------------------|----------------------------------|
| (1946)        |                    |  |                   |                                    |                                  |                                |   |                         |                           |                                  |
| May           | \$ 1,123.05        | \$ 61.29   | \$ 193.25         | \$ 6.54                            | \$ 11.22                         | -                              | \$ 428.00                                   | 428'                    | \$ 1,823.35               | \$ 4.26                          |
| June          | 851.93             | 46.50  | 342.75            | 5.73                               | 6.66                             | \$ 64.80                       | 329.00                                      | 329'                    | 1,647.37                  | 5.01                             |
| July          | 1,730.96           | 111.79   | 659.22            | 9.85                               | 31.00                            | 82.30                          | 490.00                                      | 490'                    | 3,115.12                  | 6.35                             |
| August        | 3,169.85           | 173.01   | 1,112.95          | 33.45                              | 38.70                            | 122.50                         | 806.00                                      | 806'                    | 5,456.46                  | 6.77                             |
| September     | 2,555.44           | 139.47   | 2,070.84          | 20.58                              | 72.79                            | 317.75                         | 956.00                                      | 956'                    | 6,132.87                  | 6.41                             |
| October       | 1,135.18           | 61.96  | 484.29            | 15.41                              | 7.75                             | 45.30                          | 230.00                                      | 230'                    | 1,979.89                  | 8.60                             |
| November      | -                  | -  | 843.36            | 7.24                               | -                                | -                              | -   | -                       | 850.60                    | -                                |
| <b>TOTALS</b> | <b>\$10,566.41</b> | <b>\$594.02</b>                                    | <b>\$5,706.66</b> | <b>\$98.80</b>                     | <b>\$168.12</b>                  | <b>\$632.65</b>                | <b>\$3,239.00</b>                           | <b>3,239'</b>           | <b>\$21,005.66</b>        | <b>\$6.4852</b>                  |

D. D. GARBUTT SHAFT MAY - NOVEMBER, 1946

Summary of Supply Cost Breakdown

| <u>Item</u>                          | <u>Cost</u> | <u>% of total<br/>Supply Cost</u> |
|--------------------------------------|-------------|-----------------------------------|
| Diamonds                             | \$4,606.58  | 80.71%                            |
| Drill equipment & tools              | 1,005.71    | 17.64                             |
| Miscellaneous (grease, cement, etc.) | 94.37       | 1.65                              |
| TOTAL                                | \$5,706.66  |                                   |

Supply Cost Breakdown

1 - Diamonds

Cost of Diamonds by Type and Month and Per Foot Drilled

| <u>Month</u> | <u>Type</u>  |                  |              | <u>Feet<br/>drilled</u> | <u>Cost per<br/>foot</u> |
|--------------|--------------|------------------|--------------|-------------------------|--------------------------|
|              | <u>Bortz</u> | <u>#2 Carbon</u> | <u>Congo</u> |                         |                          |
| May          | \$ 114.00    |                  |              | 428                     | \$ .266                  |
| June         | 309.84       | \$ 2.00          |              | 329                     | .948                     |
| July         | 526.56       |                  | \$15.15      | 490                     | 1.105                    |
| Aug.         | 707.10       | 62.00            |              | 806                     | .954                     |
| Sept.        | 1,719.72     | 56.00            |              | 956                     | 1.856                    |
| Oct.         | 203.10       | 187.50           |              | 230                     | 1.698                    |
| Nov.         | 716.58       |                  | 18.03        | -                       | -                        |
| Total        |              | \$307.50         |              |                         |                          |
| Less         |              | 31.00            |              |                         |                          |
| Total        | \$4,296.90   | \$276.50         | \$33.18      | 3,239'                  | \$1.423                  |

Grand Total Diamonds: \$4,606.58

Summary of Diamond Costs

|                               |                      |            |
|-------------------------------|----------------------|------------|
| Bortz                         | 716.15 cts. @ \$6.00 | \$4,296.90 |
| #2 Carbon                     | 5.53 cts. @ \$50.00  | 276.50     |
| Congo                         | 11.06 cts. @ \$3.00  | 33.18      |
| Total cost of diamonds        |                      | \$4,606.58 |
| Total feet drilled            |                      | 3,239      |
| Diamond cost per foot drilled |                      | \$1.423    |

D.D. GARBUTT SHAFT MAY - NOVEMBER, 1946

Supply Cost Breakdown (Continued)

2 - Drill equipment and tools

Core barrels

|     |     |     |                |         |          |
|-----|-----|-----|----------------|---------|----------|
| EXE | 8'  | 1 @ | \$27.25        | \$27.25 |          |
| EX  | 8'  | 1 @ | \$27.25        | \$27.25 |          |
| EX  | 8'  | 2 @ | \$15.00 (used) | \$30.00 |          |
| AX  | 10' | 2 @ | \$22.50        | \$45.00 |          |
| AX  | 5'  | 1 @ | \$20.00        | \$20.00 |          |
| ?   | 10' | 1 @ | \$40.95        | \$40.95 |          |
|     |     |     |                |         | \$190.45 |

Bits

|            |  |     |         |         |          |
|------------|--|-----|---------|---------|----------|
| EXTC       |  | 1 @ | \$ 7.65 | \$ 7.65 |          |
| EXE        |  | 7 @ | \$ 5.25 | \$36.75 |          |
| EXE (plug) |  | 2 @ | \$ 6.35 | \$12.70 |          |
| EX         |  | 7 @ | \$ 4.50 | \$31.50 |          |
| AXTC       |  | 1 @ | \$11.00 | \$11.00 |          |
| AX         |  | 7 @ | \$ 7.65 | \$53.55 |          |
|            |  |     |         |         | \$153.15 |

Reamer Shells

|                         |  |      |                      |         |          |
|-------------------------|--|------|----------------------|---------|----------|
| EXE                     |  | 1 @  | \$10.45              | \$10.45 |          |
| EXE                     |  | 11 @ | \$ 4.00              | \$44.00 |          |
| EX                      |  | 4 @  | \$ 4.00              | \$16.00 |          |
| EX                      |  | 3 @  | \$ 2.50              | \$ 7.50 |          |
| AX                      |  | 14 @ | \$ 4.75              | \$66.50 |          |
| AX                      |  | 7 @  | \$ 4.75 (level wall) | \$33.25 |          |
| BX                      |  | 3 @  | \$ 6.00              | \$18.00 |          |
| BX to AX casing adapter |  | 1 @  |                      | \$ 5.30 |          |
|                         |  |      |                      |         | \$201.00 |

Casing

|                        |       |                  |  |         |          |
|------------------------|-------|------------------|--|---------|----------|
| EX to 1½" pipe adapter |       | 1 @              |  | \$ 2.75 |          |
| EX                     | 175'  | @ 80¢            |  | 140.00  |          |
| EX                     | 2-5'  | lengths @ \$4.50 |  | 9.00    |          |
| AX                     | plugs | 2 @ \$5.00       |  | 10.00   |          |
|                        |       |                  |  |         | \$161.75 |

Miscellaneous tools and equipment

|   |                 |
|---|-----------------|
| Hook jaws for 18" rigid wrench 4 @ \$1.50   | \$ 6.00         |
| Hook jaws for 18" rigid wrench 6 @ \$1.29   | 7.74            |
| Hook jaws for 24" rigid wrench 2 @ \$2.45   | 4.90            |
| Heel jaws for 18" rigid wrench 4 @ \$ .50   | 2.00            |
| Heel jaws for 18" rigid wrench 4 @ \$ .43   | 1.72            |
| Steel cable 3/8" 60' @ 20¢                  | 12.00           |
| Steel cable 3/8" 60' 6 @ \$14.30            | 85.80           |
| Foot clamp jaws EAB EXE 2 @ \$5.25          | 10.50           |
| Foot clamp jaws EAB AX 6 @ \$5.25           | 31.50           |
| Foot clamp jaws EAB EX 2 @ \$5.25           | 10.50           |
| Core springs AX 6 @ \$1.10                  | 6.60            |
| E rod jaws for BB clamp 2 @ \$5.25          | 10.50           |
| A-E hoisting plug bolt 1 @ \$2.50           | 2.50            |
| A pin to E pin rod coupling 1 @ \$3.25      | 3.25            |
| Feed nut gears 200-275 BB #2                | 24.00           |
| Brass shifter collar 1 @ \$4.50             | 4.50            |
| Hinge bolts, nuts 963c 2 @ \$17.00          | 34.00           |
| Bushings, check, bolts for BB #2 2 @ \$4.50 | 9.00            |
| Bushings, brass, EAB water swivel, plain    | 5.00            |
| Bushings, chuck 1 @ \$2.00                  | 2.00            |
| Bushings, chuck 1 @ \$3.50                  | 3.50            |
| Bolt, chuck 1 @ 75¢                         | .75             |
| Bolt, chuck 1 @ \$1.00                      | 1.00            |
| Hose, 3/4 x 4 50'                           | 19.60           |
| Packing, Garlock 1/2", 6'                   | .50             |
|   | <u>\$299.36</u> |

TOTAL COST DRILL EQUIPMENT AND TOOLS . . . . . \$1,005.71

3 - Miscellaneous

|                           |              |
|---------------------------|--------------|
| <u>Cement</u>             |              |
| Lumnite 2 sacks           | \$ 7.65      |
| Lumnite 4 sacks           | 14.28        |
| Cal seal 2 sacks plus tax | <u>11.57</u> |
|                           | \$ 33.50     |
| Batteries tape            | \$ .51       |
| String 3 balls plus tax   | 3.09         |
| Grease 1 bbl.             | 36.72        |
| Grease 100#               | 11.74        |
| Grease 75#                | <u>8.81</u>  |
|                           | \$ 60.87     |

TOTAL COST MISCELLANEOUS . . . . . \$ 94.37

COLORADO, LAKE COUNTY  
LEADVILLE DISTRICT  
IBEX-SUNDAY AREA  
GARBUTT SHAFT  
DIAMOND DRILLING COSTS

Total feet drilled: 3955

| <u>Shale</u> | <u>Sandstone and Grit</u> | <u>Limestone</u> | <u>Porphyry</u> | <u>Sulfides</u> |
|--------------|---------------------------|------------------|-----------------|-----------------|
| 23%          | 27%                       | 5%               | 38%             | 3%              |

The rock types and physical conditions of this area are essentially the same as those of the Eclipse area, with the exception that in and near the sulfide zones in the Garbutt considerable jasperoid (siliceous replacement of dolomite) with associated vugs and cavities was encountered. This material is exceptionally difficult to drill and to make recoveries in.

Bit consumption was unusually high in the Garbutt, higher in the Eclipse. This was in part due to the use of worn-out leaky rods, resulting in low water pressures at the bit face.

DIAMOND DRILLING COST AT ECLIPSE SHAFT, COLORADO

January - April, 1947

Drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |             |
|------------------------|-------------|
| Number of holes        | 3           |
| Total cost             | \$11,267.70 |
| Total feet drilled     | 2,218'      |
| Cost per foot drilled  | \$5.0801    |
| Average length of hole | 739.3'      |

Breakdown of Total Cost

| <u>Item</u>                | <u>Cost</u>  | <u>Cost per foot drilled</u> | <u>% of total Cost</u> |
|----------------------------|--------------|------------------------------|------------------------|
| Drilling 2218' @ \$5.00    | \$11,090.00  | \$5.0000                     | 98.42                  |
| Cementing 23 hrs. @ \$4.50 | 103.50       | 0.0467                       | 0.92                   |
| Miscellaneous              |              |                              |                        |
| Labor \$70.40              |              |                              |                        |
| Tax, payroll \$1.69        |              |                              |                        |
| Fed. tax \$2.11            | <u>74.20</u> | <u>0.0334</u>                | <u>0.66</u>            |
| TOTAL                      | \$11,267.70  | \$5.0801                     | 100.00                 |

COLORADO, LAKE COUNTY  
LEADVILLE DISTRICT  
IBEX-SUNDAY AREA  
ECLIPSE SHAFT  
DIAMOND DRILLING COSTS

| Shale | Total feet drilled: 2218<br>Sandstone and Grits | Limestone | Porphyry | Breccia |
|-------|---|-----------|----------|---------|
| 27%   | 29%   | 8%        | 24%      | 5%      |

The percentage not accounted for represents 100% core losses, gouges, etc. The shale ranges from soft to medium hard; is generally argillaceous, sometimes calcareous and/or carbonaceous. The ss and grits vary from medium hard, dense, argillaceous sandstones to hard, dense, rather coarse, quartzitic arkose grits, with a minor amount of very hard, almost pure quartzite. The limestone is mainly a medium to fine crystalline dolomite. The breccia is a mixture of porphyry and shale fragments. In general the rocks are firmly consolidated, ranging in age from Pre-Cambrian to Middle Pennsylvanian. The porphyry is a moderately hard, dense monzonite, medium to fine grained, with variable amounts of silicification and hydrothermal alteration. Numerous faults and slips are present in all rock formations. The drilling rate was on the average faster and the bit consumption lower in the porphyry than in the sediments.



1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: **5-31-47**  
 INVOICE NUMBER:  
 CONTRACT: **A. S. & R.**  
 TERMS: **AS PER CONTRACT**  
 LOCATION: **KOKOMO**

**AMERICAN SMELTING & REFINING Co.**  
**700 PACIFIC NAT'L. LIFE BLDG.**  
**SALT LAKE CITY, UTAH**

| FOR CUSTOMER'S USE ONLY |                |
|-------------------------|----------------|
| REGISTER NO.            | VOUCHER NO.    |
| TERMS APPROVED          | RATE APPROVED  |
| CALCULATIONS CHECKED    |                |
| FOOTAGE CHECKED         |                |
| ADJUSTMENTS             |                |
| COUNTING DISTRIBUTIONS  |                |
| AUDITED                 | FINAL APPROVAL |

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL    |
|----------|------------|------|-----|---------|------|----------|
| 59       | AX         | 306  | 319 | 13      | 3.90 | \$ 50.70 |
| 61       | STAND PIPE | 0    | 20  | 20      | 4.50 | 90.00    |
|          | BX         | 20   | 32  | 12      | 3.90 | 46.80    |
|          | AX         | 32   | 374 | 342     | 3.90 | 1333.80  |
| 62       | STAND PIPE | 0    | 45  | 45      | 4.50 | 202.50   |
|          | BX         | 45   | 61  | 16      | 3.90 | 62.40    |
|          | AX         | 61   | 331 | 270     | 3.90 | 1053.00  |
| 63       | STAND PIPE | 0    | 50  | 50      | 4.50 | 225.00   |
|          | BX         | 50   | 61  | 11      | 3.90 | 42.90    |
|          | AX         | 61   | 290 | 229     | 3.90 | 893.10   |
|          | EX         | 290  | 321 | 31      | 3.75 | 116.25   |
|          | AX REAMING |      |     | 10      | 1.65 | 16.50    |
| 64       | STAND PIPE | 0    | 28  | 28      | 4.50 | 126.00   |
|          | BX         | 28   | 42  | 14      | 3.90 | 54.60    |
|          | AX         | 42   | 271 | 229     | 3.90 | 893.10   |
|          | EX         | 271  | 400 | 129     | 3.75 | 483.75   |
|          | EX         | 400  | 419 | 19      | 4.10 | 200.90   |
| 65       | STAND PIPE | 0    | 63  | 63      | 4.50 | 283.50   |
|          | BX         | 63   | 76  | 13      | 3.90 | 50.70    |
|          | AX         | 76   | 292 | 216     | 3.90 | 842.40   |
|          | EX         | 292  | 337 | 45      | 3.75 | 168.75   |
| 66       | STAND PIPE | 0    | 22  | 22      | 4.50 | 99.00    |

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1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 4-30-47

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: NET 10 Prox.

LOCATION: KOKOMO

American Smelting & Refining Co.  
 Pacific National Life Bldg.  
 SALT LAKE CITY, UTAH

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL          |
|----------|------------|------|-----|---------|------|----------------|
| 55       | AX         | 219  | 330 | 111     | 3.90 | 432.90         |
| 56       | BR         | 0    | 20  | 20      | 3.90 | 78.00          |
|          | AX         | 20   | 279 | 259     | 3.90 | 1010.10        |
| 57       | STAND PIPE | 0    | 26  | 26      | 4.50 | 117.00         |
|          | BR         | 26   | 36  | 10      | 3.90 | 39.00          |
|          | AX         | 36   | 273 | 237     | 3.90 | 924.30         |
|          |            |      |     | 74      | 1.65 | 122.10         |
| 58       | AX REAMING |      | 15  | 15      | 4.50 | 67.50          |
|          | STAND PIPE | 0    |     |         |      |                |
|          | BR         | 15   | 20  | 5       | 3.90 | 19.50          |
|          | AX         | 20   | 370 | 350     | 3.90 | 1365.00        |
|          | AX REAMING |      |     | 5       | 1.65 | 8.25           |
| 59       | STAND PIPE | 0    | 56  | 56      | 4.50 | 252.00         |
|          | BR         | 56   | 68  | 12      | 3.90 | 46.80          |
|          | AX         | 68   | 306 | 238     | 3.90 | 928.20         |
| 60       | SPWTC      | 0    | 15  | 15      | 4.50 | 67.50          |
|          | BR         | 15   | 30  | 15      | 3.90 | 58.50          |
|          | AX         | 30   | 333 | 303     | 3.90 | 1191.70        |
|          |            |      |     |         |      | <u>6710.35</u> |

Landwehr

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

## FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

(BRT.FWD)

| HOLE NO. |               | FROM | TO  | FOOTAGE | RATE | TOTAL     |
|----------|---------------|------|-----|---------|------|-----------|
| 54       | BX DRIVE PIPE | 0    | 15  | 15      | 4.50 | \$ 67.50  |
|          | BX            | 15   | 20  | 5       | 3.90 | 19.50     |
|          | AX            | 20   | 270 | 250     | 3.90 | 975.00    |
| 55       | BX DRIVE PIPE | 0    | 21  | 21      | 4.50 | 94.50     |
|          | BX            | 21   | 35  | 14      | 3.90 | 54.60     |
|          | AX            | 35   | 219 | 184     | 3.90 | 717.60    |
|          | AX REAMING    |      |     | 127     | 1.65 | 209.55    |
|          |               |      |     |         |      | \$6541.30 |

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1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

(COPY)

| HOLE NO. |                                     | FROM  | TO  | FOOTAGE | RATE | TOTAL    |
|----------|-------------------------------------|-------|-----|---------|------|----------|
| 49       | EXE                                 | 552   | 576 | 24      | 4 10 | \$ 98.40 |
| 50       | AX                                  | 348   | 400 | 52      | 3 90 | 202.80   |
|          | AX                                  | 400   | 481 | 81      | 4 35 | 352.35   |
|          | AX REAMING                          |       |     | 164     | 1 68 | 270.60   |
|          | DEFLECTINGS                         | DAYS  |     | 80 HRS  | 2 41 | 192.80   |
|          | DEFLECTING                          | SWING |     | 80 HRS  | 2 53 | 202.40   |
|          | MACHINE SHOP WORK ON DEFLECTOR      |       |     |         |      | 10.50    |
|          | 2 SAX LUMNITE CEMENT                |       |     |         | 3 50 | 7.00     |
|          | 2 SAX CAL SEAL                      |       |     |         | 4 50 | 9.00     |
|          | 20' BX CASING LEFT IN HOLE ON ORDER |       |     |         |      | 23.00    |
| 51       | AX                                  | 373   | 400 | 27      | 3 90 | 105.30   |
|          | AX                                  | 400   | 557 | 157     | 4 35 | 682.95   |
| 52       | BX DRIVE PIPE                       | 0     | 12  | 12      | 4 50 | 54.00    |
|          | BX                                  | 12    | 25  | 13      | 3 90 | 50.70    |
|          | AX                                  | 25    | 245 | 230     | 3 90 | 897.00   |
|          | AX REAMING                          |       |     | 15      | 1 65 | 24.75    |
| 53       | BX DRIVE PIPE                       | 0     | 11  | 11      | 4 50 | 49.50    |
|          | BX                                  | 11    | 20  | 9       | 3 90 | 35.10    |
|          | AX                                  | 20    | 311 | 291     | 3 90 | 1134.90  |

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1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 2-28-47  
 INVOICE NUMBER:  
 CONTRACT: A. S. & R.  
 TERMS: NET 10 PROX.  
 LOCATION: KOKOMO

AMERICAN SMELTING & REFINING Co.  
 KOKOMO, COLORADO

(COPY)

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO.             | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|----------------------|------|-----|---------|------|------------------|
| 44 EXE               | 385  | 400 | 15      | 3.75 | \$ 56.25         |
|                      | 400  | 540 | 140     | 4.10 | 574.00           |
| EXE REAMING          |      |     | 21      | 1.35 | 28.35            |
| CEMENTING            |      |     | 36 HRS  | 4.00 | 144.00           |
| 3 SAX LUMNITE CEMENT |      |     |         | 3.50 | 10.50            |
| 48 STAND PIPE        | 28   | 51  | 23      | 4.50 | 103.50           |
| AX                   | 51   | 323 | 272     | 3.90 | 1060.80          |
| AX REAMING           |      |     | 134     | 1.65 | 221.00           |
| 49 STAND PIPE        | 13   | 20  | 7       | 4.50 | 31.50            |
| AX DRILLING          | 20   | 398 | 378     | 3.90 | 1474.20          |
| EXE DRILLING         | 398  | 400 | 2       | 3.75 | 7.50             |
| EXE DRILLING         | 400  | 552 | 152     | 4.10 | 623.20           |
| CEMENTING            |      |     | 17 HRS  | 4.00 | 68.00            |
| 50 STAND PIPE        | 0    | 24  | 24      | 4.50 | 108.00           |
| AX                   | 24   | 348 | 324     | 3.90 | 1263.60          |
| AX REAMING           |      |     | 149     | 1.65 | 245.85           |
| CEMENTING            |      |     | 19 HRS  | 4.00 | 76.00            |
| 51 STAND PIPE        | 0    | 41  | 41      | 4.50 | 184.50           |
| AX DRILLING          | 41   | 373 | 332     | 3.90 | 1294.80          |
|                      |      |     |         |      | <u>\$7575.55</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

° Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 1-31-47

INVOICE NUMBER:

CONTRACT: KOKOMO

TERMS: AS CONTRACTED

LOCATION: KOKOMO, COLORADO

AMERICAN SMELTING & REFINING Co.  
KOKOMO, COLORADO

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. |                | FROM | TO  | FOOTAGE | RATE | TOTAL     |
|----------|----------------|------|-----|---------|------|-----------|
| 43       |                | 245  | 274 | 29      | 3.90 | \$ 113.10 |
| 44       | AX             | 50   | 267 | 217     | 3.90 | 846.30    |
|          | EXE            | 267  | 385 | 118     | 3.75 | 442.50    |
|          | AX REAMING     | 54   | 254 | 200     | 1.65 | 330.00    |
|          | EXE "          | 267  | 359 | 92      | 1.35 | 124.20    |
| 45       | EXE            | 207  | 400 | 193     | 3.75 | 723.75    |
|          | EXE            | 400  | 410 | 10      | 4.10 | 41.00     |
| 46       | BXD STANDPIPE  | 0    | 23  | 23      | 4.50 | 103.50    |
|          | AX DRILLING    | 23   | 296 | 273     | 3.90 | 1064.70   |
| 47       | BXD STANDPIPE  | 0    | 38  | 38      | 4.50 | 171.00    |
|          | AX DRILLING    | 38   | 272 | 234     | 3.90 | 912.60    |
| 48       | BXD SP         | 0    | 28  | 28      | 4.50 | 126.00    |
| 49       | BXD STANDPIPE  | 0    | 13  | 13      | 4.50 | 58.50     |
|          | CEMENTING TIME |      |     | 12 HRS  | 4.00 | \$507.15  |
|          |                |      |     |         |      | 48.00     |
|          |                |      |     |         |      | \$5105.15 |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 12-31-46

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING Co.  
Mc CORNICK BLDG.

SALT LAKE CITY, UTAH

(COPY)

| HOLE NO. |                             | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|----------|-----------------------------|------|-----|---------|------|------------------|
| 38       | AX                          | 137  | 316 | 179     | 3.90 | \$698.10         |
|          | CEMENTING & DRILLING CEMENT |      |     | 5 HRS   | 4.00 | 20.00            |
| 39       | PIPE                        | 0    | 14  | 14      | 4.50 | 63.00            |
|          | AX                          | 14   | 231 | 217     | 3.90 | 846.30           |
|          | EXE                         | 231  | 400 | 169     | 3.75 | 633.75           |
|          | EXE                         | 400  | 404 | 4       | 4.10 | 16.40            |
| 40       | PIPE                        | 0    | 16  | 16      | 4.50 | 72.00            |
|          | AX                          | 16   | 145 | 129     | 3.90 | 503.10           |
| 41       | PIPE                        | 0    | 45  | 45      | 4.50 | 202.50           |
|          | AX                          | 45   | 265 | 220     | 3.90 | 858.00           |
| 42       | PIPE                        | 0    | 24  | 24      | 4.50 | 108.00           |
|          | AX                          | 24   | 257 | 233     | 3.90 | 908.70           |
|          | REAMING                     | 30   | 50  | 20      | 1.65 | 33.00            |
| 43       | PIPE                        | 0    | 35  | 35      | 4.50 | 157.50           |
|          | AX                          | 35   | 245 | 210     | 3.90 | 819.00           |
| 44       | PIPE                        | 0    | 46  | 46      | 4.50 | 207.00           |
|          | BX DRILLING                 | 46   | 50  | 4       | 3.90 | 15.60            |
| 45       | PIPE                        | 0    | 16  | 16      | 4.50 | 72.00            |
|          | AX                          | 16   | 167 | 151     | 3.90 | 588.90           |
|          | EXE                         | 167  | 207 | 40      | 3.75 | 150.00           |
|          | REAMING                     | 30   | 50  | 20      | 1.65 | 33.00            |
|          |                             |      |     |         |      | <u>\$7005.85</u> |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 11-30-46

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING &amp; REFINING CO

Mc CORNICK BUILDING

SALT LAKE CITY, UTAH

| HOLE NO.   |      | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|------------|------|------|-----|---------|------|------------------|
| 32         | EXE  | 359  | 400 | 41      | 3.75 | \$153.75         |
|            | EXE  | 400  | 445 | 45      | 4.10 | 184.50           |
| 33         | AX   | 146  | 250 | 104     | 3.90 | 405.60           |
| 34         | PIPE | 0    | 52  | 52      | 4.50 | 234.00           |
|            | BX   | 52   | 60  | 8       | 3.90 | 31.20            |
|            | AX   | 60   | 237 | 177     | 3.90 | 690.30           |
| 35         | PIPE | 0    | 7   | 7       | 4.50 | 31.50            |
|            | BX   | 7    | 17  | 10      | 3.90 | 39.00            |
|            | AX   | 17   | 314 | 297     | 3.90 | 1159.30          |
| AX REAMING |      |      |     | 13      | 1.65 | 21.45            |
| 36         | PIPE | 0    | 56  | 56      | 4.50 | 252.00           |
|            | BX   | 56   | 61  | 5       | 3.90 | 19.50            |
|            | AX   | 61   | 233 | 172     | 3.90 | 670.80           |
| 37         | PIPE | 0    | 16  | 16      | 4.50 | 72.00            |
|            | BX   | 16   | 27  | 11      | 3.90 | 42.90            |
|            | AX   | 27   | 196 | 169     | 3.90 | 659.10           |
|            | EX   | 196  | 307 | 111     | 3.75 | 416.25           |
| 38         | PIPE | 0    | 40  | 40      | 4.50 | 180.00           |
|            | BX   | 40   | 50  | 10      | 3.90 | 39.00            |
|            | AX   | 50   | 137 | 87      | 3.90 | 339.30           |
|            |      |      |     |         |      | <u>\$5640.45</u> |
|            |      |      |     |         |      | 5641.45          |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 10-31-47

INVOICE NUMBER:

CONTRACT: KOKOMO

TERMS: AS PER CONTRACT

LOCATION: KOKOMO, COLORADO

AMERICAN SMELTING & REFINING CO  
Mc CORNICK BUILDING  
SALT LAKE CITY, UTAH

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL     |
|----------|------------|------|-----|---------|------|-----------|
| 29       |            | 133  | 198 | 65      | 3 90 | 253.50    |
| 30       | SP         | 0    | 53  | 53      | 4 50 | 238.50    |
|          | AX         | 53   | 225 | 172     | 3 90 | 670.80    |
| 31       | SP         | 0    | 80  | 80      | 4 50 | 360.00    |
|          | AX         | 80   | 286 | 206     | 3 90 | 803.40    |
| 32       | SP         | 0    | 27  | 27      | 4 50 | 121.50    |
|          | AX         | 27   | 356 | 329     | 3 90 | 1283.10   |
|          | EX         | 356  | 359 | 3       | 3 75 | 11.25     |
| 33       | SP         | 0    | 38  | 38      | 4 50 | 171.00    |
|          | AX         | 38   | 146 | 108     | 3 90 | 421.20    |
|          | AX REAMING | 45   | 86  | 41      | 1 65 | 67.65     |
|          |            |      |     |         |      | \$4401.90 |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 9-30-46  
 INVOICE NUMBER:  
 CONTRACT: A. S. & R.  
 TERMS: AS PER CONTRACT  
 LOCATION: KOKOMO

AMERICAN SMELTING & REFINING Co.  
 Mc CORNICK BLDG.  
 SALT LAKE CITY, UTAH

(COPY)

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL      |
|----------|------------|------|-----|---------|------|------------|
| 24       | AX         | 25   | 170 | 145     | 3.90 | 565.50     |
| 25       | SP         | 0    | 11  | 11      | 4.50 | 49.50      |
|          | BX         | 11   | 15  | 4       | 3.90 | 15.60      |
|          | AX         | 15   | 215 | 200     | 3.90 | 780.00     |
|          | REAMING AX |      |     | 10'     | 1.65 | 16.50      |
| 26       | SP         | 0    | 14  | 14      | 4.50 | 63.00      |
|          | BX         | 14   | 20  | 6       | 3.90 | 23.40      |
|          | AX         | 20   | 227 | 207     | 3.90 | 807.30     |
|          | REAMING AX |      |     | 34      | 1.65 | 56.10      |
| 27       | SP         | 0    | 13  | 13      | 4.50 | 58.50      |
|          | BX         | 13   | 30  | 17      | 3.90 | 66.30      |
|          | AX         | 30   | 238 | 208     | 3.90 | 811.20     |
| 28       | SP         | 0    | 19  | 19      | 4.50 | 85.50      |
|          | BX         | 19   | 30  | 11      | 3.90 | 42.90      |
|          | AX         | 30   | 231 | 201     | 3.90 | 783.90     |
|          | AX REAM    |      |     | 10      | 1.65 | 16.50      |
| 29       | SP         | 0    | 18  | 18      | 4.50 | 81.00      |
|          | BX         | 18   | 30  | 12      | 3.90 | 46.80      |
|          | AX         | 30   | 93  | 63      | 3.90 | 245.70     |
|          | EX         | 93   | 133 | 40      | 3.75 | 150.00     |
|          | AX REAM    |      |     | 13'     | 1.65 | 21.45      |
|          |            |      |     |         |      | \$4,786.65 |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 8-31-46

INVOICE NUMBER:

CONTRACT:

TERMS:

LOCATION:

A. S. &amp; R.

AS PER CONTRACT

KOKOMO, COLORADO

AMERICAN SMELTING &amp; REFINING CO.

Mc CORNICK BUILDING

SALT LAKE CITY, UTAH

| HOLE NO. |           | FROM | TO  | FOOTAGE |     | RATE | TOTAL     |
|----------|-----------|------|-----|---------|-----|------|-----------|
| 19       | EX        | 174  | 240 | 66      |     | 3.75 | 247.50    |
| 20       | AX        | 0    | 78  | 78      |     | 3.90 | 304.20    |
|          | EX        | 78   | 152 | 74      |     | 3.75 | 277.50    |
|          | CEMENTING |      |     | 31      | HRS | 4.00 | 124.00    |
|          | REAMING   |      |     | 11      | FT. | 1.65 | 18.15     |
| 21       | STANDPIPE | 0    | 11  | 11      |     | 4.50 | 49.50     |
| 21       | AX        | 11   | 142 | 131     |     | 3.90 | 510.90    |
|          | EX        | 142  | 208 | 66      |     | 3.75 | 247.50    |
| 22       | STANDPIPE | 0    | 12  | 12      |     | 4.50 | 54.00     |
|          | AX        | 12   | 177 | 165     |     | 3.90 | 643.50    |
| 23       | STANDPIPE | 0    | 8   | 8       |     | 4.50 | 36.00     |
|          | AX        | 8    | 177 | 169     |     | 3.90 | 659.10    |
| 24       | STANDPIPE | 0    | 13  | 13      |     | 4.50 | 58.50     |
|          | AX        | 13   | 25  | 12      |     | 3.90 | 46.80     |
|          |           |      |     |         |     |      | \$3277.15 |

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# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 7-31-46  
 INVOICE NUMBER: A 4444  
 CONTRACT: A. S. & R.  
 TERMS: AS PER CONTRACT  
 LOCATION: KOKOMO, COLORADO

AMERICAN SMELTING & REFINING Co.  
 Mc CORNICK BUILDING  
 SALT LAKE CITY, UTAH

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO.   | FROM | TO  | FOOTAGE                       | RATE | TOTAL              |
|------------|------|-----|-------------------------------|------|--------------------|
| 1 BX       | 0    | 52  | 52                            | 3.90 | \$ 202.80          |
| AX         | 52   | 227 | 175                           | 3.90 | 682.50             |
| REAMING BX |      |     | 3 <sup>1</sup> / <sub>2</sub> | 1.65 | 5.78               |
| 2 BX       | 0    | 16  | 16                            | 3.90 | 62.40              |
| AX         | 16   | 177 | 161                           | 3.90 | 627.90             |
| 3 BX       | 0    | 16  | 16                            | 3.90 | 62.40              |
| AX         | 16   | 158 | 142                           | 3.90 | 553.80             |
| EX         | 158  | 174 | 16                            | 3.75 | 60.00              |
|            |      |     |                               |      | <u>\$2257.58</u> ✓ |

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# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 4-10-47

INVOICE NUMBER:

CONTRACT: A. S. & R.

TERMS: AS PER CONTRACT

LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING Co.  
LEADVILLE, COLORADO

| HOLE NO.         |                 | FROM | TO  | FOOTAGE      | RATE         | TOTAL                                |
|------------------|-----------------|------|-----|--------------|--------------|--------------------------------------|
| 3                | EX<br>CEMENTING | 760  | 883 | 123<br>4 HRS | 5.00<br>4.50 | \$615.00<br>18.00<br><u>\$633.00</u> |
| C<br>O<br>P<br>Y |                 |      |     |              |              |                                      |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

## FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

| HOLE NO.       | FROM | TO  | FOOTAGE       | RATE         | TOTAL              |
|----------------|------|-----|---------------|--------------|--------------------|
| 2<br>CEMENTING | 591  | 614 | 23<br>8 HRS   | 5.00<br>4.50 | \$ 115.00<br>36.00 |
| 3<br>CEMENTING | 0q   | 760 | 760<br>11 HRS | 5.00<br>4.50 | 3800.00<br>49.50   |
|                |      |     |               |              | <u>\$4000.50</u>   |

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**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 2-28-47  
 INVOICE NUMBER: A 1186  
 CONTRACT:  
 TERMS: AS PER CONTRACT  
 LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING Co.  
 LEADVILLE, COLORADO

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. | FROM | TO  | FOOTAGE | RATE  | TOTAL           |
|----------|------|-----|---------|-------|-----------------|
| 1        | 534  | 721 | 187     | 5.00  | \$ 935.00       |
| 2        | 0    | 591 | 591     | 5.00  | 2955.00         |
| LABOR    |      |     |         |       | 70.40           |
| TAX      |      |     |         | 2.402 | 1.69            |
| FED TAX  |      |     |         | 3.00  | 2.11            |
|          |      |     |         |       | <u>33964.20</u> |

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1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 1-31-47

INVOICE NUMBER:

CONTRACT: A. S. & R.

TERMS: AS PER CONTRACT

LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING Co.  
LEADVILLE, COLORADO

### FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. | FROM | TO  | FOOTAGE | RATE | TOTAL     |
|----------|------|-----|---------|------|-----------|
| 1        | 0    | 534 | 534     | 5.00 | \$2670.00 |

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SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT  
 OUR INVOICE DATE 11-12-46  
 OUR INVOICE NO. A 948  
 TERMS NET 10 PROX  
 SHIPPED VIA

AMERICAN SMELTING & REFINING Co.  
 LEADVILLE, COLORADO

(COPY)

SHIPPED TO:  
 DESTINATION:

FINAL BILLING

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
|                           |                | FINAL APPROVAL |
| AUDITED                   |                |                |

2 SAX LUMNITE CEMENT  
 TEL. & TEL.  
 EXPRESS  
 7 AX BITS  
 1 AXTC BIT  
 7 EXE BITS  
 2 EXE PLUG BITS  
 1 EXTC BIT  
 1 EXE REAMER SHELL  
 119.43 Cts. BORTZ  
 6.01 Cts. CONGO

LESS 1 STONE .62 Cts. #2 CARBON

6.15

5.53

|        |                |
|--------|----------------|
|        | \$ 7.65 ✓      |
|        | 6.40           |
|        | .84            |
| \$7.65 | 53.55 ✓        |
| 11.00  | 11.00 ✓        |
| 5.25   | 36.75 ✓        |
| 6.35   | 12.70 ✓        |
| 7.65   | 7.65 ✓         |
| 10.45  | 10.45 ✓        |
| 6.00   | 716.58         |
| 3.00   | 18.03          |
|        | <hr/> \$881.60 |
| 50.00  | 31.00          |
|        | <hr/> \$850.60 |
|        | 724            |
|        | 843 36         |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT AMERICAN SMELTING & REFINING CO.  
 OUR INVOICE DATE 10-31-46 LEADVILLE, COLORADO  
 OUR INVOICE NO. A 896  
 TERMS NET 10 PROX.  
 SHIPPED VIA

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

|  |       |                    |
|--|-------|--------------------|
| LABOR                                  |       | \$1135.18          |
| WORKMAN'S COMP.                        | 2.458 | 27.90              |
| PAYROLL TAXES                          | 3%    | 34.06              |
| SUPPLIES:                              |       |                    |
| 2 EXE FOOT CLAMP JAWS EAB              | 5.25  | 10.50 ✓            |
| 1 BRASS SHIFTER COLLAR FOR BB #2 DRILL | 4.50  | 4.50 ✓             |
| 60 FT. 3/8" STEEL HOISTING CABLE       | .20   | 12.00 ✓            |
| 4 AX REAMER SHELLS                     | 4.75  | 19.00 ✓            |
| 5 EXE REAMER SHELLS                    | 4.00  | 20.00 ✓            |
| 4 HOOK JAWS FOR 18" RIDGID WRENCH      | 1.50  | 6.00 ✓             |
| 4 HEEL JAWS FOR 18" RIDGID WRENCHES    | .50   | 2.00 ✓             |
| 2 HOOK JAWS FOR 24" " "                | 2.45  | 4.90 ✓             |
| 4 SAX LUMNITE CEMENT                   |       | 14.28 ✓            |
| BATTERIES TAPE                         |       | .51 ✓              |
| TEL. & TEL.                            |       | 14.95              |
| EXPRESS                                |       | .46                |
| 6 AX BITS                              | 7.55  | 45.30 ✓            |
| 33.85 CARATS BORTZ                     | 6.00  | 203.10             |
| 3.75 CARATS No. 2 CARBON               | 50.00 | 187.50             |
| R. F. DURFEE EXPENSE ACCOUNT           |       | 7.75               |
| 230 FT. DRILLED IN OCT.                | 1.00  | 230.00             |
| 6.15                                   |       | <del>1979.89</del> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

|                      |               |                                 |
|----------------------|---------------|---------------------------------|
| YOUR ORDER NO.       | CONTRACT      |                                 |
| YOUR REQUISITION NO. | GARBUTT SHAFT | AMERICAN SMELTING & REFINING Co |
| OUR INVOICE DATE     | 9-30-46       | LEADVILLE, COLORADO             |
| OUR INVOICE NO.      | A 791         |                                 |
| TERMS                | NET 10 PROX.  |                                 |
| SHIPPED VIA          |               |                                 |

(BRT. FWED)

(COBY)

SHIPPED TO:  
DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

**SETTING CHARGES:**

- 2 BX BITS INSERTS
- 16 AX BITS
- 30 EXE BITS
- 2 EXTC BITS
- 1 EXE PLUG BIT

**DIAMONDS:**

- 1, 28
- 2 STONES 1.12 CTS. No. 2 CARBON
- 286.62 CTS. BORTZ
- R. F. DURFEE EXPENSE A/c
- 956' DRILLED

|         |            |
|---------|------------|
| \$11.40 | \$ 22.80 ✓ |
| 7.55    | 120.80 ✓   |
| 5.15    | 154.50 ✓   |
| 6.65    | 13.30 ✓    |
|         | 6.35 ✓     |

|       |         |
|-------|---------|
| 50.00 | 56.00   |
| 6.00  | 1719.72 |
|       | 72.79   |
| 1.00  | 956.00  |

~~86133.87~~  
6132.87

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT  
 OUR INVOICE DATE 9-30-47  
 OUR INVOICE NO. A 791  
 TERMS NET 10 PROX  
 SHIPPED VIA

AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO

(COPY)

SHIPPED TO:  
 DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| 19                        |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

LABOR  
 WORKMAN'S COMPENSATION INS.  
 PAYROLL TAXES  
 SUPPLIES:  
 1 BARREL GREASE  
 90' EX CASING  
 7 AX BEVEL WALL REAMER SHELLS  
 6 EXE REAMER SHELLS  
 1 EXE CORE BARREL - 8' New  
 3 60' STEEL HOISTING CABLES 3/8"  
 2 AX JAWS FOR EAB FOOT CLAMP  
 2 EX JAWS FOR EAB FOOT CLAMP  
 1 SET FEED NUT GEARS 200-275 FOR BBNo.2  
 2 CHECK BUSHINGS, BOLTS FOR BB No.2  
 1 SET BUSHINGS (BRASS FOR EAB WATER SWIVEL (PLAIN)  
 FREIGHT & TRANS.  
 TEL. & TEL. TOLLS

|       |           |
|-------|-----------|
|       | \$2555.44 |
| 2.458 | 62.81     |
| 3%    | 76.66     |
|       | 36.72 ✓   |
| .80   | 72.00 ✓   |
| 4.75  | 33.25 ✓   |
| 4.00  | 24.00 ✓   |
|       | 27.25 ✓   |
| 14.30 | 42.90 ✓   |
| 5.25  | 10.50 ✓   |
| 5.25  | 10.50 ✓   |
|       | 24.00 ✓   |
| 4.50  | 9.00 ✓    |
|       | 5.00 ✓    |
|       | 10.52     |
|       | 10.06     |

(CONTINUED PAGE 2)

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO.      CONTRACT  
 YOUR REQUISITION NO.      GARBUTT SHAFT  
 OUR INVOICE DATE      8-31-46  
 OUR INVOICE NO.  
 TERMS      NET 10 PROX  
 SHIPPED VIA

AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO

(BRT FWD)      (COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

TELEPHONE TOLLS  
 SETTING CHARGES:  
 2 BX BIT  
 12 AX BITS  
 2 EX BITS  
 117.85 Cts. BORTZ  
 1.24 Cts. No. 2 CARBON  
 R. F. DURFEE EXP. A/c  
 806 FEET DRILLED @ \$1.00 PER FOOT

|              |                 |
|--------------|-----------------|
|              | \$ 7.98 ✓       |
| \$21.60      |                 |
| 90.60        |                 |
| <u>10.30</u> | \$122.50 ✓      |
| 6.00         | 707.10 ✓        |
| 50.00        | 62.00 ✓         |
|              | 38.70 ✓         |
|              | <u>806.00</u> ✓ |
|              | \$5456.46       |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **8-31-47**  
 OUR INVOICE NO.  
 TERMS **NET 10 PROX**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING CO.**  
**LEADVILLE, COLORADO**

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

LABOR  
 WORKMAN'S COMP. INS.  
 PAYROLL TAXES  
 SUPPLIES:  
 50' 3/4 4 PLY HOSE  
 1 A PIN TO E PIN ROD COUPLING  
 3 60' STEEL HOISTING CABLES 3/8"  
 85' EX CASING LEFT IN HOLE NO. 1  
 4 EX REAMER SHELLS  
 6 AX REAMER SHELLS  
 2 963C HINGE BOLTS NUTS FOR BB SMALL CLAMP  
 6 HOOK JAWS FOR 18" RIDGID WRENCHES  
 4 HEEL JAWS FOR 18" RIDGID WRENCHES  
 2 10' AX CORE BARRELS (USED)  
 1 5' AX CORE BARRELS  
 2 8' EX CORE BARRELS (USED)  
 6 1/2" GARLOCK RUBBER PACKING  
 2 AX FOOT CLAMP JAWS  
 4 AX CORE SPRINGS  
 100" GREASE  
 FREIGHT EXPRESS

|         |             |
|---------|-------------|
|         | \$3169.85 ✓ |
|         | 77.91 ✓     |
|         | 95.10 ✓     |
|         |             |
| \$19.60 | 19.60 ✓     |
| 3.25    | 3.25 ✓      |
| 14.30   | 42.90 ✓     |
| .80     | 68.00 ✓     |
| 4.00    | 16.00 ✓     |
| 4.75    | 28.50 ✓     |
| 17.00   | 34.00 ✓     |
| 1.29    | 7.74 ✓      |
| .43     | 1.72 ✓      |
| 22.50   | 45.00 ✓     |
| 20.00   | 20.00 ✓     |
| 15.00   | 30.00 ✓     |
|         | .50 ✓       |
| 5.25    | 10.50 ✓     |
| 1.10    | 4.40 ✓      |
|         | 11.74 ✓     |
|         | 25.47 ✓     |

(CARRIED FORWARD)

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT  
 OUR INVOICE DATE 7-31-46  
 OUR INVOICE NO. A 446  
 TERMS NET 10 PROX  
 SHIPPED VIA

AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| IS                        |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

LABOR  
 WORKMAN'S COMP.  
 PAYROLL TAXES  
 4 AX REAMER SHELLS  
 3 BX REAMER SHELLS  
 1 10' CORE BARREL  
 2 AX CASING PLUGS  
 2 AX FOOT CLAMP JAWS  
 2 AX CORE SPRINGS  
 1 BX REAMING SHELL TO AX CASING ADAPTER  
 1 CHUCK BUSHING FOR BB2  
 1 CHUCK BOLT FOR BB2  
 EXPRESS  
 TELEGRAM  
 SETTING CHARGES  
 5.05 CTS. CONGO  
 87.76 CTS. BORTZ  
 75 LBS. PRESSURE GUN GREASE  
 DURFEE EXPENSE ACCOUNT  
 490 FEET DRILLED

|        |                   |
|--------|-------------------|
|        | \$1,730.96 ✓      |
|        | 42.55 ✓           |
|        | 69.24 ✓           |
| \$4.75 | 19.00 ✓           |
| 6.00   | 18.00 ✓           |
|        | 40.95 ✓           |
| 5.00   | 10.00 ✓           |
| 5.25   | 10.50 ✓           |
| 1.10   | 2.20 ✓            |
|        | 5.30 ✓            |
|        | 2.00 ✓            |
|        | .75 ✓             |
|        | 9.19 ✓            |
|        | .66 ✓             |
|        | 82.30 ✓           |
| 5.00   | 15.15 ✓           |
| 6.00   | 526.56 ✓          |
|        | 8.81 ✓            |
|        | 31.00 ✓           |
|        | 490.00 ✓          |
|        | <u>\$3,115.12</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT  
 OUR INVOICE DATE JULY 5, 1946  
 OUR INVOICE NO. A 269  
 TERMS NET 10 PROX.  
 SHIPPED VIA

AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
|                           |                | FINAL APPROVAL |
| AUDITED                   |                |                |

SHIPPED TO:  
 DESTINATION:

**JUNE OPERATIONS:**

LABOR  
 WORKMAN'S COMP. INS.  
 PAY ROLL TAXES  
 2- 5' LENGTHS EX CASING #329  
 1 CHUCK BOLT FOR BB2  
 1 CHUCK BUSHING FOR BB2  
 1 EX CASING TO 1 1/2" PIPE ADAPTER  
 3 BALLS STRING & TAX  
 2 SAX CAL SEAL CEMENT & TAX  
 DURFEES EXPENSE ACCOUNT  
 EXPRESS  
 TELEPHONE CALLS  
 SETTING CHARGE  
 .04 CTS. No. 2 CARBON  
 51.64 CTS BORTZ  
 329 FT. DRILLED

2.458  
 3.00  
 4.50  
  
  
  
  
  
  
  
  
 6.00  
 1.00

\$851.93 ✓  
 20.94 ✓  
 25.56 ✓  
 9.00 ✓  
 1.00 ✓  
 3.50 ✓  
 2.75 ✓  
 3.09 ✓  
 11.57 ✓  
 6.66 ✓  
 .93 ✓  
 4.80 ✓  
 64.80 ✓  
 2.00 ✓  
 309.84 ✓  
 329.00 ✓  
\$1,647.37

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. CONTRACT  
 YOUR REQUISITION NO. GARBUTT SHAFT AMERICAN SMELTING & REFINING CO  
 OUR INVOICE DATE 5-31-46 LEADVILLE,  
 OUR INVOICE NO. COLORADO  
 TERMS NET 10 PROX  
 SHIPPED VIA

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

**MAY OPERATIONS:**

LABOR

WORKMEN'S COMP. INS.

PAYROLL TAXES

**SUPPLIES:**

1 ONLY EX 8' CORE BARREL

2 " E ROD JAWS FOR BB CLAMP

1 " A-E HOISTING PLUG BOLT

3 " EX REAMER SHELLS

7 " EX BITS, SETTING & BLANKS

19.00 CARATS BORTZ

EXPRESS CHARGES

TELEPHONE CALL

R. F. DURFEE EXPENSE ACCOUNT

428 FEET DRILLED

\$5.25

2.50

2.50

4.50

6.00

1.00

\$1,123.05 ✓

27.60 ✓

33.69 ✓

27.25 ✓

10.50 ✓

2.50 ✓

7.50 ✓

31.50 ✓

114.00 ✓

4.85 ✓

1.69 ✓

11.22 ✓

428.00

\$1,823.35

July 16, 1947

Mr. J. H. Courtright  
P. O. Box 905  
Leadville, Colorado

DRILLING COST FORM

Dear Sir:

Herewith is enclosed a proposed form, prepared by Mr. Newman, for company diamond drilling costs. I wish you would look it over carefully and write me any of your suggestions or criticisms. Please return the form when you have finished.

Very truly yours,

W. R. Landwehr

WRL:si

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. & R.

TERMS: AS PER CONTRACT

LOCATION: KOKONO

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

(BRT. FWD)

| HOLE NO. |               | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|----------|---------------|------|-----|---------|------|------------------|
| 54       | EX DRIVE PIPE | 0    | 15  | 15      | 4.50 | \$ 67.50         |
|          | EX            | 15   | 20  | 5       | 3.90 | 19.50            |
|          | AX            | 20   | 270 | 250     | 3.90 | 975.00           |
| 55       | EX DRIVE PIPE | 0    | 21  | 21      | 4.50 | 94.50            |
|          | EX            | 21   | 35  | 14      | 3.90 | 54.60            |
|          | AX            | 35   | 219 | 184     | 3.90 | 717.60           |
|          | AX REAMING    |      |     | 127     | 1.65 | 209.55           |
|          |               |      |     |         |      | <u>\$6541.30</u> |

COPY

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

(COPY)

| HOLE NO. |                                     | FROM  | TO  | FOOTAGE | RATE | TOTAL    |
|----------|-------------------------------------|-------|-----|---------|------|----------|
| 49       | EXE                                 | 552   | 576 | 24      | 4.10 | \$ 98.40 |
| 50       | AX                                  | 348   | 400 | 52      | 3.90 | 202.80   |
|          | AX                                  | 400   | 481 | 81      | 4.35 | 352.35   |
|          | AX REAMING                          |       |     | 164     | 1.68 | 270.60   |
|          | DEFLECTING                          | DAYS  |     | 80 HRS  | 2.44 | 192.80   |
|          | DEFLECTING                          | SWING |     | 80 HRS  | 2.53 | 202.40   |
|          | MACHINE SHOP WORK ON DEFLECTOR      |       |     |         |      | 10.50    |
|          | 2 SAX LUMNITE CEMENT                |       |     |         | 3.50 | 7.00     |
|          | 2 SAX CAL SEAL                      |       |     |         | 4.50 | 9.00     |
|          | 20' BX CASING LEFT IN HOLE ON ORDER |       |     |         |      | 23.00    |
| 51       | AX                                  | 373   | 400 | 27      | 3.90 | 105.30   |
|          | AX                                  | 400   | 557 | 157     | 4.35 | 682.95   |
| 52       | BX DRIVE PIPE                       | 0     | 12  | 12      | 4.50 | 54.00    |
|          | BX                                  | 12    | 25  | 13      | 3.90 | 50.70    |
|          | AX                                  | 25    | 245 | 230     | 3.90 | 897.00   |
|          | AX REAMING                          |       |     | 15      | 1.65 | 24.75    |
| 53       | BX DRIVE PIPE                       | 0     | 11  | 11      | 4.50 | 49.50    |
|          | BX                                  | 11    | 20  | 9       | 3.90 | 35.10    |
|          | AX                                  | 20    | 311 | 291     | 3.90 | 1134.90  |

(CARRIED FORWARD)

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

## BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 2-28-47

AMERICAN SMELTING & REFINING Co.  
KOKONO, COLORADO

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: NET 10 PROX.

LOCATION: Kokono

(COPY)

| HOLE NO.           | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|--------------------|------|-----|---------|------|------------------|
| 44 EXE             | 385  | 400 | 15      | 3.75 | \$ 56.25         |
|                    | 400  | 540 | 140     | 4.10 | 574.00           |
| EXE REAMING        |      |     | 21      | 1.35 | 28.35            |
| CEMENTING          |      |     | 36 HRS  | 4.00 | 144.00           |
| 3 SAX LIGHT CEMENT |      |     |         | 3.50 | 10.50            |
| 48 STAND PIPE      | 28   | 51  | 23      | 4.50 | 103.50           |
| AX                 | 51   | 323 | 272     | 3.90 | 1060.80          |
| AX REAMING         |      |     | 134     | 1.65 | 221.00           |
| 49 STAND PIPE      | 13   | 20  | 7       | 4.50 | 31.50            |
| AX DRILLING        | 20   | 398 | 378     | 3.90 | 1474.20          |
| EXE DRILLING       | 398  | 400 | 2       | 3.75 | 7.50             |
| EXE DRILLING       | 400  | 552 | 152     | 4.10 | 623.20           |
| CEMENTING          |      |     | 17 HRS  | 4.00 | 68.00            |
| 50 STAND PIPE      | 0    | 24  | 24      | 4.50 | 108.00           |
| AX                 | 24   | 348 | 324     | 3.90 | 1263.60          |
| AX REAMING         |      |     | 149     | 1.65 | 245.85           |
| CEMENTING          |      |     | 19 HRS  | 4.00 | 76.00            |
| 51 STAND PIPE      | 0    | 41  | 41      | 4.50 | 184.50           |
| AX DRILLING        | 41   | 373 | 332     | 3.90 | 1294.80          |
|                    |      |     |         |      | <u>\$7575.55</u> |



1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: 11-30-46

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING CO.  
Mc CORNICK BUILDING  
SALT LAKE CITY, UTAH

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|----------|------------|------|-----|---------|------|------------------|
| 32       | EXE        | 359  | 400 | 41      | 3.75 | \$153.75         |
|          | EXE        | 400  | 445 | 45      | 4.10 | 184.50           |
| 33       | AX         | 146  | 250 | 104     | 3.90 | 405.60           |
| 34       | PIPE       | 0    | 52  | 52      | 4.50 | 234.00           |
|          | BX         | 52   | 60  | 8       | 3.90 | 31.20            |
|          | AX         | 60   | 237 | 177     | 3.90 | 690.30           |
| 35       | PIPE       | 0    | 7   | 7       | 4.50 | 31.50            |
|          | BX         | 7    | 17  | 10      | 3.90 | 39.00            |
|          | AX         | 17   | 314 | 297     | 3.90 | 1159.30          |
|          | AX REAMING |      |     | 13'     | 1.65 | 21.45            |
| 36       | PIPE       | 0    | 56  | 56      | 4.50 | 252.00           |
|          | BX         | 56   | 64  | 5       | 3.90 | 19.50            |
|          | AX         | 64   | 233 | 172     | 3.90 | 670.80           |
| 37       | PIPE       | 0    | 16  | 16      | 4.50 | 72.00            |
|          | BX         | 16   | 27  | 11      | 3.90 | 42.90            |
|          | AX         | 27   | 196 | 169     | 3.90 | 659.10           |
|          | EX         | 196  | 307 | 111     | 3.75 | 416.25           |
| 38       | PIPE       | 0    | 40  | 40      | 4.50 | 180.00           |
|          | BX         | 40   | 50  | 10      | 3.90 | 39.00            |
|          | AX         | 50   | 137 | 87      | 3.90 | 339.30           |
|          |            |      |     |         |      | <u>\$5640.45</u> |

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SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 12-31-46

INVOICE NUMBER:

CONTRACT: A. S. &amp; R.

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

AMERICAN SMELTING & REFINING Co.  
 MC CORNICK BLDG.  
 SALT LAKE CITY, UTAH

(COPY)

| HOLE NO. |                             | FROM | TO  | FOOTAGE |     | RATE | TOTAL            |
|----------|-----------------------------|------|-----|---------|-----|------|------------------|
| 38       | AX                          | 137  | 316 | 179     |     | 3.90 | \$698.10         |
|          | CEMENTING & DRILLING CEMENT |      |     | 5       | HRS | 4.00 | 20.00            |
| 39       | PIPE                        | 0    | 14  | 14      |     | 4.50 | 63.00            |
|          | AX                          | 14   | 231 | 217     |     | 3.90 | 846.30           |
|          | EXE                         | 231  | 400 | 169     |     | 3.75 | 633.75           |
|          | EXE                         | 400  | 404 | 4       |     | 4.10 | 16.40            |
| 40       | PIPE                        | 0    | 16  | 16      |     | 4.50 | 72.00            |
|          | AX                          | 16   | 145 | 129     |     | 3.90 | 503.10           |
| 41       | PIPE                        | 0    | 45  | 45      |     | 4.50 | 202.50           |
|          | AX                          | 45   | 265 | 220     |     | 3.90 | 858.00           |
| 42       | PIPE                        | 0    | 24  | 24      |     | 4.50 | 108.00           |
|          | AX                          | 24   | 257 | 233     |     | 3.90 | 908.70           |
|          | REAMING                     | 30   | 50  | 20      |     | 1.65 | 33.00            |
| 43       | PIPE                        | 0    | 35  | 35      |     | 4.50 | 157.50           |
|          | AX                          | 35   | 245 | 210     |     | 3.90 | 819.00           |
| 44       | PIPE                        | 0    | 46  | 46      |     | 4.50 | 207.00           |
|          | BX DRILLING                 | 46   | 50  | 4       |     | 3.90 | 15.60            |
| 45       | PIPE                        | 0    | 16  | 16      |     | 4.50 | 72.00            |
|          | AX                          | 16   | 167 | 151     |     | 3.90 | 588.90           |
|          | EXE                         | 167  | 207 | 40      |     | 3.75 | 150.00           |
|          | REAMING                     | 30   | 50  | 20      |     | 1.65 | 33.00            |
|          |                             |      |     |         |     |      | <u>\$7005.85</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 10-31-48

INVOICE NUMBER:

CONTRACT: KOKOMO

TERMS: AS PER CONTRACT

LOCATION: KOKOMO, COLORADO

AMERICAN SMELTING & REFINING CO.  
 Mc CORNICK BUILDING  
 SALT LAKE CITY, UTAH

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL            |
|----------|------------|------|-----|---------|------|------------------|
| 29       |            | 133  | 198 | 65      | 3.90 | 253.50           |
| 30       | SP         | 0    | 53  | 53      | 4.50 | 238.50           |
|          | AX         | 53   | 225 | 172     | 3.90 | 670.80           |
| 31       | SP         | 0    | 80  | 80      | 4.50 | 360.00           |
|          | AX         | 80   | 286 | 206     | 3.90 | 803.40           |
| 32       | SP         | 0    | 27  | 27      | 4.50 | 121.50           |
|          | AX         | 27   | 356 | 329     | 3.90 | 1283.10          |
|          | EX         | 356  | 359 | 3       | 3.75 | 11.25            |
| 33       | SP         | 0    | 38  | 38      | 4.50 | 171.00           |
|          | AX         | 38   | 146 | 108     | 3.90 | 421.20           |
|          | AX REAMING | 45   | 86  | 41      | 1.65 | 67.65            |
|          |            |      |     |         |      | <u>\$4401.90</u> |

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SALT LAKE CITY 4, UTAH

Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 9-30-46

AMERICAN SMELTING &amp; REFINING CO.

INVOICE NUMBER:

MC CORNICK BLDG.

CONTRACT: A. S. &amp; R.

SALT LAKE CITY, UTAH

TERMS: AS PER CONTRACT

LOCATION: KOKOMO

(COPY)

| HOLE NO. |            | FROM | TO  | FOOTAGE | RATE | TOTAL             |
|----------|------------|------|-----|---------|------|-------------------|
| 24       | AX         | 25   | 170 | 145     | 3.90 | 565.50            |
| 25       | SP         | 0    | 11  | 11      | 4.50 | 49.50             |
|          | BX         | 11   | 15  | 4       | 3.90 | 15.60             |
|          | AX         | 15   | 215 | 200     | 3.90 | 780.00            |
|          | REAMING AX |      |     | 10'     | 1.65 | 16.50             |
| 26       | SP         | 0    | 14  | 14      | 4.50 | 63.00             |
|          | BX         | 14   | 20  | 6       | 3.90 | 23.40             |
|          | AX         | 20   | 227 | 207     | 3.90 | 807.30            |
|          | REAMING AX |      |     | 34      | 1.65 | 56.10             |
| 27       | SP         | 0    | 13  | 13      | 4.50 | 58.50             |
|          | BX         | 13   | 30  | 17      | 3.90 | 66.30             |
|          | AX         | 30   | 238 | 208     | 3.90 | 811.20            |
| 28       | SP         | 0    | 19  | 19      | 4.50 | 85.50             |
|          | BX         | 19   | 30  | 11      | 3.90 | 42.90             |
|          | AX         | 30   | 231 | 201     | 3.90 | 783.90            |
|          | AX REAM    |      |     | 10      | 1.65 | 16.50             |
| 29       | SP         | 0    | 18  | 18      | 4.50 | 81.00             |
|          | BX         | 18   | 30  | 12      | 3.90 | 46.80             |
|          | AX         | 30   | 93  | 63      | 3.90 | 245.70            |
|          | EX         | 93   | 133 | 40      | 3.75 | 150.00            |
|          | AX REAM    |      |     | 13'     | 1.65 | 21.45             |
|          |            |      |     |         |      | <u>\$4,786.65</u> |

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Phone 6-8555

**BOYLES BROS. DRILLING COMPANY**

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE:

8-31-46

INVOICE NUMBER:

AMERICAN SMELTING &amp; REFINING CO.

CONTRACT:

A. S. &amp; R.

Mc CORMICK BUILDING

TERMS:

AS PER CONTRACT

SALT LAKE CITY, UTAH

LOCATION:

KOKOMO, COLORADO

| HOLE NO. |           | FROM | TO  | FOOTAGE |     | RATE | TOTAL            |
|----------|-----------|------|-----|---------|-----|------|------------------|
| 19       | EX        | 174  | 240 | 66      |     | 3.75 | 247.50           |
| 20       | AX        | 0    | 78  | 78      |     | 3.90 | 304.20           |
|          | EX        | 78   | 152 | 74      |     | 3.75 | 277.50           |
|          | CEMENTING |      |     | 31      | HRS | 4.00 | 124.00           |
|          | REAMING   |      |     | 11      | FT. | 1.65 | 18.15            |
| 21       | STANDPIPE | 0    | 11  | 11      |     | 4.50 | 49.50            |
| 21       | AX        | 11   | 142 | 131     |     | 3.90 | 510.90           |
|          | EX        | 142  | 208 | 66      |     | 3.75 | 247.50           |
| 22       | STANDPIPE | 0    | 12  | 12      |     | 4.50 | 54.00            |
|          | AX        | 12   | 177 | 165     |     | 3.90 | 643.50           |
| 23       | STANDPIPE | 0    | 8   | 8       |     | 4.50 | 36.00            |
|          | AX        | 8    | 177 | 169     |     | 3.90 | 659.10           |
| 24       | STANDPIPE | 0    | 13  | 13      |     | 4.50 | 58.50            |
|          | AX        | 13   | 25  | 12      |     | 3.90 | 46.80            |
|          |           |      |     |         |     |      | <u>\$3277.15</u> |

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SALT LAKE CITY 4 UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 7-31-46  
 INVOICE NUMBER: A 4444  
 CONTRACT: A. S. & R.  
 TERMS: AS PER CONTRACT  
 LOCATION: KOKONO, COLORADO

AMERICAN SMELTING & REFINING Co.  
 Mc CORMICK BUILDING  
 SALT LAKE CITY, UTAH

| HOLE NO.   | FROM | TO  | FOOTAGE                       | RATE | TOTAL            |
|------------|------|-----|-------------------------------|------|------------------|
| 1 BX       | 0    | 52  | 52                            | 3.90 | \$ 202.80        |
| AX         | 52   | 227 | 175                           | 3.90 | 682.50           |
| REAMING BX |      |     | 3 <sup>1</sup> / <sub>2</sub> | 1.65 | 5.78             |
| 2 BX       | 0    | 16  | 16                            | 3.90 | 62.40            |
| AX         | 16   | 177 | 161                           | 3.90 | 627.90           |
| 3 BX       | 0    | 16  | 16                            | 3.90 | 62.40            |
| AX         | 16   | 158 | 142                           | 3.90 | 553.80           |
| EX         | 158  | 174 | 16                            | 3.75 | 60.00            |
|            |      |     |                               |      | <u>\$2257.58</u> |

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SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 4-10-47

INVOICE NUMBER:

CONTRACT: A. S. & R.

TERMS: AS PER CONTRACT

LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING Co.  
LEADVILLE, COLORADO

| HOLE NO.   |                 | FROM | TO  | FOOTAGE      | RATE         | TOTAL                                |
|--|-----------------|------|-----|--------------|--------------|--------------------------------------|
| 3  | EX<br>CEMENTING | 760  | 883 | 123<br>4 HRS | 5.00<br>4.50 | \$615.00<br>18.00<br><u>\$633.00</u> |
| <p>an. 21.83' } For these holes according to records of Boyles Bros. work.</p> <p>96 shifts - 2096'</p> <p style="text-align: center;">C<br/>O<br/>P</p> |                 |      |     |              |              |                                      |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

FOR CUSTOMER'S USE ONLY

|                          |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE: 3-31-47

INVOICE NUMBER:

CONTRACT: A. S. & R.

TERMS: AS PER CONTRACT

LOCATION: ECLIPSE SHAFT

AMERICAN SMELTING & REFINING CO.  
LEADVILLE, COLORADO

| HOLE NO.       | FROM | TO  | FOOTAGE       | RATE         | TOTAL                                |
|----------------|------|-----|---------------|--------------|--------------------------------------|
| 2<br>CEMENTING | 591  | 614 | 23<br>8 HRS   | 5.00<br>4.50 | \$ 115.00<br>36.00                   |
| 3<br>CEMENTING | 00   | 760 | 760<br>11 HRS | 5.00<br>4.50 | 3800.00<br>49.50<br><u>\$4000.50</u> |

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SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

INVOICE DATE: **2-28-47**  
 INVOICE NUMBER: **A 1186**  
 CONTRACT:  
 TERMS: **AS PER CONTRACT**  
 LOCATION: **ECLIPSE SHAFT**

**AMERICAN SMELTING & REFINING Co.  
 LEADVILLE, COLORADO**

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

| HOLE NO.       | FROM | TO  | FOOTAGE | RATE         | TOTAL                   |
|----------------|------|-----|---------|--------------|-------------------------|
| 1              | 534  | 721 | 187     | 5.00         | \$ 935.00               |
| 2              | 0    | 591 | 591     | 5.00         | 2955.00                 |
| <b>LABOR</b>   |      |     |         |              | <b>70.40</b>            |
| <b>Tax</b>     |      |     |         | <b>2.402</b> | <b>1.69</b>             |
| <b>FED TAX</b> |      |     |         | <b>3.00</b>  | <b>2.11</b>             |
|                |      |     | 778     |              | <u><b>\$3964.20</b></u> |

*labor used for company work* →

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-9555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

| FOR CUSTOMER'S USE ONLY  |                |
|--------------------------|----------------|
| REGISTER NO.             | VOUCHER NO.    |
| TERMS APPROVED           | RATE APPROVED  |
| CALCULATIONS CHECKED     |                |
| FOOTAGE CHECKED          |                |
| ADJUSTMENTS              |                |
| ACCOUNTING DISTRIBUTIONS |                |
| AUDITED                  | FINAL APPROVAL |

INVOICE DATE:

1-31-47

INVOICE NUMBER:

CONTRACT:

A. S. & R.

TERMS:

AS PER CONTRACT

LOCATION:

ECLIPSE SHAFT

AMERICAN SMELTING & REFINING Co.  
LEADVILLE, COLORADO

| HOLE NO.         | FROM | TO  | FOOTAGE | RATE | TOTAL     |
|------------------|------|-----|---------|------|-----------|
| 1                | 0    | 534 | 534     | 5.00 | \$2670.00 |
| C<br>O<br>P<br>Y |      |     |         |      |           |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **11-12-46**  
 OUR INVOICE NO. **A 948**  
 TERMS **NET 10 PROX**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING Co.**  
**LEADVILLE, COLORADO**

(COPY)

SHIPPED TO:  
 DESTINATION:

**FINAL BILLING**

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

2 SAX LUMITE CEMENT  
 TEL. & TEL.  
 EXPRESS  
 7 AX BITS  
 1 AXTC BIT  
 7 EXE BITS  
 2 EXE PLUG BITS  
 1 EXTC BIT  
 1 EXE REAMER SHELL  
 119.43 Cts. BORTZ  
 6.01 Cts. CONGO

LESS 1 STONE .62 CTS. #2 CARBON

|        |                 |
|--------|-----------------|
|        | \$ 7.65         |
|        | 6.40            |
|        | .84             |
| \$7.65 | 53.55           |
| 11.00  | 11.00           |
| 5.25   | 36.75           |
| 6.35   | 12.70           |
| 7.65   | 7.65            |
| 10.45  | 10.45           |
| 6.00   | 716.58          |
| 3.00   | 18.03           |
|        | <u>\$881.60</u> |
| 50.00  | <u>31.00</u>    |
|        | <u>\$850.60</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARRETT SHAFT AMERICAN SMELTING & REFINING CO.**  
 OUR INVOICE DATE **10-31-46** **LEADVILLE, COLORADO**  
 OUR INVOICE NO. **A 896**  
 TERMS **NET 10 PROX.**  
 SHIPPED VIA

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
DESTINATION:

LABOR  
 WORKMAN'S COMP.  
 PAYROLL TAXES  
 SUPPLIES:

2 EXE FOOT CLAMP JAWS EAB  
 1 BRASS SHIFTER COLLAR FOR BB #2 DRILL  
 60 FT. 3/8" STEEL HOISTING CABLE  
 4 AX REAMER SHELLS  
 5 EXE REAMER SHELLS  
 4 HOOK JAWS FOR 18" RIDGID WRENCHES  
 4 HEEL JAWS FOR 18" RIDGID WRENCHES  
 2 HOOK JAWS FOR 24" " "  
 4 SAX LUMNITE CEMENT  
 BATTERIES TAPE

TEL. & TEL.  
 EXPRESS

6 AX BITS  
 33.85 CARATS BORTZ  
 3.75 CARATS NO. 2 CARBON  
 \* \* \* \* \* EXPENSE ACCOUNT  
 230 FT. DRILLED IN OCT.

|       |  |                  |
|-------|--|------------------|
|       |  | \$1135.18        |
| 2.458 |  | 27.90            |
| 3%    |  | 34.06            |
| 5.25  |  | 10.50            |
| 4.50  |  | 4.50             |
| .20   |  | 12.00            |
| 4.75  |  | 19.00            |
| 4.00  |  | 20.00            |
| 1.50  |  | 6.00             |
| .50   |  | 2.00             |
| 2.45  |  | 4.90             |
|       |  | 14.28            |
|       |  | .51              |
|       |  | 14.95            |
|       |  | .46              |
| 7.55  |  | 45.30            |
| 6.00  |  | 203.10           |
| 50.00 |  | 187.50           |
|       |  | 7.75             |
|       |  | 230.00           |
| 1.00  |  | <u>\$1919.89</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **9-30-46**  
 OUR INVOICE NO. **A 791**  
 TERMS **NET 10 PROX.**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING CO**  
**LEADVILLE, COLORADO**

(BRT. FWED) (COPY)

SHIPPED TO:  
 DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |       |
|---------------------------|----------------|-------|
| REGISTER NO.              | VOUCHER NO.    |       |
| F.O.B. CHECKED            |                |       |
| TERMS APPROVED            | PRICE APPROVED |       |
| CALCULATIONS CHECKED      |                |       |
| TRANSPORTATION            |                |       |
| FREIGHT BILL NO.          | AMOUNT         |       |
| MATERIAL RECEIVED         |                |       |
| DATE                      | SIGNATURE      | TITLE |
| SATISFACTORY AND APPROVED |                |       |
| ADJUSTMENTS               |                |       |
| ACCOUNTING DISTRIBUTION   |                |       |
| AUDITED                   | FINAL APPROVAL |       |

**SETTING CHARGES:**

2 BX BITS INSERTS  
 16 AX BITS  
 30 EXE BITS  
 2 EXTC BITS  
 1 EXE PLUG BIT

**DIAMONDS:**

2 STONES 1.12 CTS. NO. 2 CARBON  
 286.62 CTS. BORTZ  
 R. F. DURFEE EXPENSE A/c  
 956' DRILLED

|         |                |
|---------|----------------|
| \$11.40 | \$ 22.80       |
| 7.55    | 120.80         |
| 5.15    | 154.50         |
| 6.65    | 13.30          |
|         | 6.35           |
| 50.00   | 56.00          |
| 6.00    | 1719.72        |
| 1.00    | 72.79          |
|         | 956.00         |
|         | <u>6133.87</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **9-30-47**  
 OUR INVOICE NO. **A 791**  
 TERMS **NET 10 PROX**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING Co.**  
**LEADVILLE, COLORADO**

(COPY)

SHIPPED TO:  
 DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

**LABOR**  
**WORKMAN'S COMPENSATION INS.**  
**PAYROLL TAXES**  
**SUPPLIES:**  
 1 BARREL GREASE  
 90' EX CASING  
 7 AX BEVEL WALL REAMER SHELLS  
 6 EXE REAMER SHELLS  
 1 EXE CORE BARREL - 8" NEW  
 3 60' STEEL HOISTING CABLES 3/8"  
 2 AX JAWS FOR EAB FOOT CLAMP  
 2 EX JAWS FOR EAB FOOT CLAMP  
 1 SET FEED NUT GEARS 200-275 FOR BB No.2  
 2 CHECK BUSHINGS, BOLTS FOR BB No.2  
 1 SET BUSHINGS (BRASS FOR EAB WATER SWIVEL (PLAIN)  
**FREIGHT & TRANS.**  
**TEL. & TEL. TOLLS**

|       |           |
|-------|-----------|
|       | \$2555.44 |
| 2.458 | 62.81     |
| 3%    | 76.66     |
|       | 36.72     |
| .80   | 72.00     |
| 4.75  | 33.25     |
| 4.00  | 24.00     |
|       | 27.25     |
| 14.30 | 42.90     |
| 5.25  | 10.50     |
| 5.25  | 10.50     |
|       | 24.00     |
| 4.50  | 9.00      |
|       | 5.00      |
|       | 10.52     |
|       | 10.06     |

(CONTINUED PAGE 2)

1321 South \_\_\_\_\_ St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **8-31-46**  
 OUR INVOICE NO. \_\_\_\_\_  
 TERMS **NET 10 PROX**  
 SHIPPED VIA \_\_\_\_\_

**AMERICAN SMELTING & REFINING CO.**  
**LEADVILLE, COLORADO**

(BRT FWD) (COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
|                           |                | FINAL APPROVAL |
| AUDITED                   |                |                |

SHIPPED TO:  
 DESTINATION:

TELEPHONE TOLLS  
 SETTING CHARGES:  
 2 BX BIT  
 12 AX BITS  
 2 EX BITS  
 117.85 Cts. BORTZ  
 1.24 Cts. No. 2 CARBON  
 R. F. DURFEE EXP. A/c  
 806 FEET DRILLED @ \$1.00 PER FOOT

\$21.60  
 90.60  
10.30  
 6.00  
 50.00

\$ 7.98  
  
 \$122.50  
 707.10  
 62.00  
 38.70  
 806.00  
\$5456.46

1321 South \_\_\_\_\_ St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **8-31-47**  
 OUR INVOICE NO.  
 TERMS **NET 10 PROX**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO**

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

**LABOR**  
**WORKMAN'S COMP. INS.**  
**PAYROLL TAXES**  
**SUPPLIES:**  
 50' 3/4 4 PLY ROSE  
 1 A PIN TO E PIN ROD COUPLING  
 3 60' STEEL HOISTING CABLES 3/8"  
 85' EX CASING LEFT IN HOLE NO. 1  
 4 EX REAMER SHELLS  
 6 AX REAMER SHELLS  
 2 963C HINGE BOLTS NUTS FOR BB SMALL CLAMP  
 6 HOOK JAWS FOR 18" RIDGID WRENCHES  
 4 HEEL JAWS FOR 18" RIDGID WRENCHES  
 2 10' AX CORE BARRELS (USED)  
 1 5' AX CORE BARRELS  
 2 8' EX CORE BARRELS (USED)  
 6 1/2" GARLOCK RUBBER PACKING  
 2 AX FOOT CLAMP JAWS  
 4 AX CORE SPRINGS  
 100" GREASE  
 FREIGHT EXPRESS

(CARRIED FORWARD)

|         |           |
|---------|-----------|
|         | \$3169.85 |
|         | 77.91     |
|         | 95.10     |
| \$19.60 | 19.60     |
| 3.25    | 3.25      |
| 14.30   | 42.90     |
| .80     | 68.00     |
| 4.00    | 16.00     |
| 4.75    | 28.50     |
| 17.00   | 34.00     |
| 1.29    | 7.74      |
| .43     | 1.72      |
| 22.50   | 45.00     |
| 20.00   | 20.00     |
| 15.00   | 30.00     |
|         | .50       |
| 5.25    | 10.50     |
| 1.10    | 4.40      |
|         | 11.74     |
|         | 25.47     |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARDUETT SHAFT**  
 OUR INVOICE DATE **7-31-46**  
 OUR INVOICE NO. **A 446**  
 TERMS **NET 10 PROM**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING CO.  
 LEADVILLE, COLORADO**

(COPY)

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

SHIPPED TO:  
 DESTINATION:

|   |        |                   |
|---|--------|-------------------|
| LABOR                                   |        | \$1,730.96        |
| WORKMAN'S COMP.                         |        | 42.55             |
| PAYROLL TAXES                           |        | 69.24             |
| 4 AX REAMER SHELLS                      | \$4.75 | 19.00             |
| 3 BX REAMER SHELLS                      | 6.00   | 18.00             |
| 1 10' CORE BARREL                       |        | 40.95             |
| 2 AX CASING PLUGS                       | 5.00   | 10.00             |
| 2 AX FOOT CLAMP JAWS                    | 5.25   | 10.50             |
| 2 AX CORE SPRINGS                       | 1.10   | 2.20              |
| 1 BX REAMING SHELL TO AX CASING ADAPTER |        | 5.30              |
| 1 CHUCK BUSHING FOR B92                 |        | 2.00              |
| 1 CHUCK BOLT FOR B92                    |        | .75               |
| EXPRESS                                 |        | 9.19              |
| TELEGRAM                                |        | .66               |
| SETTING CHARGES                         |        | 82.30             |
| 5.05 Cts. CONGO                         | 5.00   | 15.15             |
| 87.76 Cts. BORTZ                        | 6.00   | 526.56            |
| 75 LBS. PRESSURE GUN GREASE             |        | 8.81              |
| DURFEE EXPENSE ACCOUNT                  |        | 31.00             |
| 490 FEET DRILLED                        |        | 490.00            |
|   |        | <u>\$3,115.12</u> |

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **JULY 5, 1946**  
 OUR INVOICE NO. **A 269**  
 TERMS **NET 10 Prox.**  
 SHIPPED VIA

**AMERICAN SMELTING & REFINING CO.**  
**LEADVILLE, COLORADO**

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SHIPPED TO:  
 DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCOUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

**JUNE OPERATIONS:**

LABOR  
 WORKMAN'S COMP. INS.  
 PAY ROLL TAXES  
 2- 5' LENGTHS EX CASING #329  
 1 CHUCK BOLT FOR BB2  
 1 CHUCK BUSHING FOR BB2  
 1 EX CASING TO 1 1/2" PIPE ADAPTER  
 3 BALLS STRING & TAX  
 2 SAX CAL SEAL CEMENT & TAX  
 DURFEES EXPENSE ACCOUNT  
 EXPRESS  
 TELEPHONE CALLS  
 SETTING CHARGE  
 .04 Cts. No. 2 CARBON  
 51.64 Cts BORTZ  
 329 FT. DRILLED

2.458  
 3.00  
 4.50

6.00  
 1.00

\$851.93  
 20.94  
 25.56  
 9.00  
 1.00  
 3.50  
 2.75  
 3.09  
 11.57  
 6.66  
 .93  
 4.80  
 64.80  
 2.00  
 309.84  
 329.00  
\$1,647.37

1321 South Main St.

SALT LAKE CITY 4, UTAH

Phone 6-8555

# BOYLES BROS. DRILLING COMPANY

Diamond Drilling Contractors and Manufacturers

YOUR ORDER NO. **CONTRACT**  
 YOUR REQUISITION NO. **GARBUTT SHAFT**  
 OUR INVOICE DATE **5-31-46**  
 OUR INVOICE NO. \_\_\_\_\_  
 TERMS **NET 10 PROX**  
 SHIPPED VIA \_\_\_\_\_

**AMERICAN SMELTING & REFINING CO.**  
**LEADVILLE,**  
**COLORADO**

(COPY)

SHIPPED TO:  
 DESTINATION:

| FOR CUSTOMER'S USE ONLY   |                |                |
|---------------------------|----------------|----------------|
| REGISTER NO.              | VOUCHER NO.    |                |
| F.O.B. CHECKED            |                |                |
| TERMS APPROVED            | PRICE APPROVED |                |
| CALCULATIONS CHECKED      |                |                |
| TRANSPORTATION            |                |                |
| FREIGHT BILL NO.          | AMOUNT         |                |
| MATERIAL RECEIVED         |                |                |
| DATE                      | SIGNATURE      | TITLE          |
| SATISFACTORY AND APPROVED |                |                |
| ADJUSTMENTS               |                |                |
| ACCDUNTING DISTRIBUTION   |                |                |
| AUDITED                   |                | FINAL APPROVAL |

**MAY OPERATIONS:**

**LABOR**

**WORKMEN'S COMP. INS.**

**PAYROLL TAXES**

**SUPPLIES:**

- 1 ONLY EX 8' CORE BARREL
- 2 " E ROD JAWS FOR BB CLAMP
- 1 " A-E HOISTING PLUG BOLT
- 3 " EX REAMER SHELLS
- 7 " EX BITS, SETTING & BLANKS
- 19.00 CARATS BORTZ

**EXPRESS CHARGES**

**TELEPHONE CALL**

**R. F. DURFEE EXPENSE ACCOUNT**

**428 FEET DRILLED**

*Cont plan \$1.00*

1.00

\$1,123.05  
 27.60  
 33.69

27.25  
 10.50  
 2.50  
 7.50  
 31.50  
 114.00

4.85  
 1.69  
 11.22

428.00

\$1,823.35

DIAMOND DRILLING COSTS AT PACIFIC MINE

April - May, 1947

Diamond drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |            |
|------------------------|------------|
| Number of holes        | 11         |
| Total cost             | \$6,695.40 |
| Total feet drilled     | 1111'      |
| Cost per foot drilled  | \$ 4.7451  |
| Average length of hole | 128.27'    |

Breakdown of Total Cost

| <u>Item</u>                               | <u>Cost</u>   | <u>Cost per foot drilled</u> | <u>% of total cost</u> |
|---|---------------|------------------------------|------------------------|
| Drilling 1111'                            | \$6,339.20    | \$4.4927                     | 94.68                  |
| Reaming 129'                              | 229.50        | 0.1627                       | 3.43                   |
| Cementing 26 hrs. @<br>\$4.50 plus cement | <u>126.70</u> | <u>0.0897</u>                | <u>1.89</u>            |
| TOTAL                                     | \$6,695.40    | \$4.7451                     | 100.00                 |

Breakdown of Drilling

| <u>Bit Type</u> | <u>Feet drilled</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|---------------------|----------------------|---------------|
| HK              | 13                  | \$5.10               | \$ 66.30      |
| EK              | 296                 | 5.10                 | 1,371.90      |
| AX              | 981                 | 4.40                 | 4,316.40      |
| EK              | <u>118</u>          | <u>3.95</u>          | <u>501.60</u> |
| TOTAL           | 1111                |                      | \$6,339.20    |

Breakdown of Reaming

| <u>Bit Type</u> | <u>Feet reamed</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|--------------------|----------------------|---------------|
| AX              | 37'                | \$2.10               | \$ 77.70      |
| EK              | <u>92'</u>         | <u>1.65</u>          | <u>151.80</u> |
| TOTAL           | 129'               |                      | \$229.50      |

Diamond losses and deflecting costs below are for holes not otherwise included in the above figures. If these diamond losses and deflecting costs are included, the total cost is increased to \$7,213.49 and the cost per foot is increased to \$5.1123

Summary of Diamond Losses and Deflectings

| <u>Item</u>                          | <u>Costs</u>  |
|--------------------------------------|---------------|
| Setting charges 4AX @ \$7.75         | \$31.00       |
| Diamonds 22.05 cts. Congo @ \$3.75 ) | 127.09        |
| 6.00 cts. Dartz @ \$7.40 )           |               |
| Deflectings 80 hrs. @ \$4.50         | <u>360.00</u> |
| TOTAL                                | \$518.09      |
| Cost per foot                        | \$ 0.3672     |

NOTE:

In general, this was a difficult diamond drilling project. The work was first started with a company operated drill, but this proved expensive and unsatisfactory because of the many problems involved. Therefore, after one hole had been completed, it was decided to contract the remaining work. Boyle Bros Drilling Co. received the contract.

All of the drilling was done in the Bayhorse dolomite formation - a series of massive, dolomitic limestones containing numerous vugs, open fissures and occasional chert lumps. The numerous openings made it impossible to get a consistent water return, particularly through the ore zone, and sludge samples were not taken, except in special cases.

The mineralized zone consisted of a fissure filling of soft oxide ore separated by ribs of hard quartz. This made it difficult to get a good core recovery through the ore zone, even though pulls were made every foot or 18 inches. Face discharge bits were tried through the ore zone, but these proved less effective than the regular bits with core springs. This was probably due to the interference of the hard quartz ribs. AX drilling gave a much higher percentage of core recovery than EX; consequently, every effort was made to reach the ore zone with as large a bit as possible.

DIAMOND DRILLING COSTS AT PACIFIC MINE

April - May, 1947

Diamond drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |            |
|------------------------|------------|
| Number of holes        | 11         |
| Total cost             | \$6,695.40 |
| Total feet drilled     | 1411'      |
| Cost per foot drilled  | \$ 4.7451  |
| Average length of hole | 128.27'    |

Breakdown of Total Cost

| <u>Item</u>                               | <u>Cost</u>   | <u>Cost per foot drilled</u> | <u>% of total cost</u> |
|---|---------------|------------------------------|------------------------|
| Drilling 1411'                            | \$6,339.20    | \$4.4927                     | 94.68                  |
| Reaming 129'                              | 229.50        | 0.1627                       | 3.43                   |
| Cementing 26 hrs. @<br>\$4.50 plus cement | <u>126.70</u> | <u>0.0897</u>                | <u>1.89</u>            |
| TOTAL                                     | \$6,695.40    | \$4.7451                     | 100.00                 |

Breakdown of Drilling

| <u>Bit Type</u> | <u>Feet drilled</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|---------------------|----------------------|---------------|
| NX              | 13                  | \$5.10               | \$ 66.30      |
| BX              | 296                 | 5.10                 | 1,371.90      |
| AX              | 981                 | 4.40                 | 4,316.40      |
| EX              | <u>148</u>          | <u>3.95</u>          | <u>584.60</u> |
| TOTAL           | 1411                |                      | \$6,339.20    |

Breakdown of Reaming

| <u>Bit Type</u> | <u>Feet reamed</u> | <u>Rate per foot</u> | <u>Cost</u>   |
|-----------------|--------------------|----------------------|---------------|
| AX              | 37'                | \$2.10               | \$ 77.70      |
| EX              | <u>92'</u>         | <u>1.65</u>          | <u>151.80</u> |
| TOTAL           | 129'               |                      | \$229.50      |

Diamond losses and deflecting costs below are for holes not otherwise included in the above figures. If these diamond losses and deflecting costs are included, the total cost is increased to \$7,213.49 and the cost per foot is increased to \$5.1123

Summary of Diamond Losses and Deflectings

| <u>Item</u>                          | <u>Costs</u>  |
|--------------------------------------|---------------|
| Setting charges LAY @ \$7.75         | \$31.00       |
| Diamonds 22.05 cts. Congo @ \$3.75 ) | 127.09        |
| 6.00 cts. Bartz @ \$7.40 )           |               |
| Deflectings 80 hrs. @ \$4.50         | <u>360.00</u> |
| TOTAL                                | \$518.09      |
| Cost per foot                        | \$ 0.3672     |

NOTE:

In general, this was a difficult diamond drilling project. The work was first started with a company operated drill, but this proved expensive and unsatisfactory because of the many problems involved. Therefore, after one hole had been completed, it was decided to contract the remaining work. Boyle Bros Drilling Co. received the contract.

All of the drilling was done in the Bayhorse dolomite formation - a series of massive, dolomitic limestones containing numerous vugs, open fissures and occasional chert lumps. The numerous openings made it impossible to get a consistent water return, particularly through the ore zone, and sludge samples were not taken, except in special cases.

The mineralized zone consisted of a fissure filling of soft oxide ore separated by ribs of hard quartz. This made it difficult to get a good core recovery through the ore zone, even though pulls were made every foot or 18 inches. Face discharge bits were tried through the ore zone, but these proved less effective than the regular bits with core springs. This was probably due to the interference of the hard quartz ribs. AX drilling gave a much higher percentage of core recovery than EX; consequently, every effort was made to reach the ore zone with as large a bit as possible.

DIAMOND DRILLING COSTS AT KOKOMO, COLORADO

July, 1946 - May, 1947

Diamond drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |             |
|------------------------|-------------|
| Number of holes        | 51          |
| Total cost             | \$62,292.38 |
| Total feet drilled     | 15,025'     |
| Cost per foot drilled  | \$ 4.1459   |
| Average length of hole | 294.6'      |

Breakdown of Total Cost W/r Length of Hole

|                        |             |             |             |             |
|------------------------|-------------|-------------|-------------|-------------|
| Number of Holes        | 8           | 22          | 13          | 8           |
| Length of Holes        | 0-200'      | 200'-300'   | 300'-400'   | >400'       |
| Total Cost             | \$ 5,527.30 | \$22,233.98 | \$17,431.10 | \$17,100.00 |
| Feet Drilled           | 1,370'      | 5,507'      | 4,286'      | 3,862'      |
| Cost per foot drilled  | \$ 4.0345   | \$ 4.0374   | \$ 4.0669   | \$ 4.4277   |
| Average length of hole | 171.25'     | 250.31'     | 329.69'     | 482.75'     |

Breakdown of Total Cost

| Item                | Cost               | Cost per<br>foot drilled | % of total<br>cost |
|---------------------|--------------------|--------------------------|--------------------|
| Drilling 15,025'    | \$59,465.45        | \$3.9578                 | 95.46              |
| Reaming 1166.5'     | 1,890.73           | .1258                    | 3.03               |
| Cementing           | 506.50             | .0337                    | 0.82               |
| Casing left in hole | 23.00              | .0016                    | 0.04               |
| Deflections         | 405.70             | .0270                    | 0.65               |
| <b>TOTAL</b>        | <b>\$62,292.38</b> | <b>\$4.1459</b>          | <b>100.00</b>      |

Breakdown of Drilling

| Item         | Total<br>feet drilled | Cost per<br>foot (rate) | % of<br>Total Cost | % of Drilling<br>Cost | Cost               |
|--------------|-----------------------|-------------------------|--------------------|-----------------------|--------------------|
| S.P.         | 1335'                 | \$4.50                  | 9.64               | 10.10                 | \$6,007.50         |
| BX           | 392'                  | 3.90                    | 2.45               | 2.58                  | 1,528.50           |
| AX           | (11488'               | 3.90                    | ( 73.59            | ( 77.08               | ( 45,838.50        |
|              | 283'                  | 4.35                    |                    |                       |                    |
|              | 580'                  | 3.75                    | ( 3.83             | ( 4.01                | ( * 2,385.60       |
| EX           | ( 49'                 | 4.10                    |                    |                       |                    |
|              | 578'                  | 3.75                    | ( 5.95             | ( 6.23                | ( 3,705.00         |
| EZE          | ( 375'                | 4.10                    |                    |                       |                    |
| <b>TOTAL</b> | <b>15,025'</b>        |                         | <b>95.46</b>       | <b>100.00</b>         | <b>**62,292.38</b> |

\* includes \$9.75 overcharge  
 \*\* Figure is \$1.00 too high

Breakdown of Reaming

| <u>Item</u> | <u>Total feet<br/>Reamed</u> | <u>Cost per<br/>foot (rate)</u> | <u>% of total<br/>cost</u> | <u>% of Ream-<br/>ing Cost</u> | <u>Cost</u>   |
|-------------|------------------------------|---------------------------------|----------------------------|--------------------------------|---------------|
| AX & BX     | (889.5'<br>(164'             | \$1.65<br>1.68                  | 2.79                       | 91.93                          | \$1,738.18    |
| EYE         | <u>113'</u>                  | 1.35                            | <u>0.24</u>                | <u>8.07</u>                    | <u>152.55</u> |
| TOTAL       | 1166.5                       |                                 | 3.03                       | 100.00                         | \$1,890.73    |

COLORADO, SUMMIT COUNTY  
KOKOMO DISTRICT  
DIAMOND DRILLING COSTS

Approximately 90% of the footage was in sandstones and grits of the Pennsylvanian Maroon formation. The sandstones are generally medium hard, medium to fine grained, argillaceous and micaceous. The grits are medium hard, coarse to conglomeritic, arkose and micaceous. Numerous soft shale and mudstone beds are present. Rather dense, medium hard limestone and sulfide account for about 5% of the footage. Glaciofluvial wash, composed of sand, pebbles and coarse, angular boulders makes up the remaining 5%. A few dikes and sills of porphyry were encountered, but represent a negligible percentage of the total footage drilled.

DIAMOND DRILLING COSTS AT CARBUTT SHAFT, COLORADO

May - November, 1946

The drilling was done on a cost plus \$1.00 per foot drilled basis. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

| <u>Item</u>  | <u>Cost</u>     | <u>Cost per ft.<br/>drilled</u> | <u>% of total<br/>cost</u> |
|--|-----------------|---------------------------------|----------------------------|
| Labor  | \$10,566.41     | \$3.2622                        | 50.30                      |
| Payroll taxes, Workman's<br>compensation insurance | 594.02          | 0.1837                          | 2.83                       |
| Supplies   | 5,706.66        | 1.7619                          | 27.17                      |
| Express, freight,<br>Tel. and Tel.                 | 98.80           | 0.0304                          | 0.47                       |
| R. F. Durfee, expense acct.                        | 168.12          | 0.0517                          | 0.80                       |
| Bit setting charges                                | 632.65          | 0.1953                          | 3.01                       |
| Driller's fee                                      | <u>3,239.00</u> | <u>1.0000</u>                   | <u>15.42</u>               |
| TOTAL  | \$21,005.66     | \$6.4852                        | 100.00                     |

D. D. CARBUTT SHAFT      MAY - NOVEMBER, 1946

Diamond Drilling Costs by Item and Month With Monthly Comparison of Costs to Feet Drilled

| <u>Month</u>  | <u>Labor</u>       | <u>Payroll taxes,<br/>Workman's<br/>Comp. Ins.</u> | <u>Supplies</u>   | <u>Express<br/>Tel. &amp; Tel. Exp.</u> | <u>R.F. Durfee<br/>Exp. Acct.</u> | <u>Bit setting<br/>Charges</u> | <u>Driller's<br/>fee (\$1<br/>per foot)</u> | <u>Feet<br/>drilled</u> | <u>Cost Per<br/>Month</u> | <u>Cost per<br/>foot drilled</u> |
|---------------|--------------------|--|-------------------|---|-----------------------------------|--------------------------------|---|-------------------------|---------------------------|----------------------------------|
| (1946)        |                    |  |                   |   |                                   |                                |   |                         |                           |                                  |
| May           | \$ 1,123.05        | \$ 61.29   | \$ 193.25         | \$ 6.54                                 | \$ 11.22                          | -                              | \$ 428.00                                   | 428'                    | \$ 1,823.35               | \$ 4.26                          |
| June          | 851.93             | 46.50  | 312.75            | 5.73                                    | 6.66                              | \$ 61.80                       | 329.00                                      | 329'                    | 1,647.37                  | 5.01                             |
| July          | 1,730.96           | 111.79   | 659.22            | 9.85                                    | 31.00                             | 82.30                          | 490.00                                      | 490'                    | 3,115.12                  | 6.35                             |
| August        | 3,169.85           | 173.01   | 1,112.95          | 33.15                                   | 38.70                             | 122.50                         | 806.00                                      | 806'                    | 5,456.46                  | 6.77                             |
| September     | 2,555.44           | 139.47   | 2,070.84          | 20.58                                   | 72.79                             | 317.75                         | 956.00                                      | 956'                    | 6,132.87                  | 6.41                             |
| October       | 1,135.18           | 61.96  | 484.29            | 15.41                                   | 7.75                              | 45.30                          | 230.00                                      | 230'                    | 1,979.89                  | 8.60                             |
| November      | -                  | -  | 843.36            | 7.24                                    | -                                 | -                              | -   | -                       | 850.60                    | -                                |
| <b>TOTALS</b> | <b>\$10,566.41</b> | <b>\$594.02</b>                                    | <b>\$5,706.66</b> | <b>\$98.80</b>                          | <b>\$168.12</b>                   | <b>\$632.65</b>                | <b>\$3,239.00</b>                           | <b>3,239'</b>           | <b>\$21,005.66</b>        | <b>\$6.4852</b>                  |

D. D. GARbutt SHAFT MAY - NOVEMBER, 1946

Summary of Supply Cost Breakdown

| <u>Item</u>                          | <u>Cost</u>       | <u>% of total<br/>Supply Cost</u> |
|--------------------------------------|-------------------|-----------------------------------|
| Diamonds                             | \$4,606.58        | 80.71%                            |
| Drill equipment & tools              | 1,005.71          | 17.61                             |
| Miscellaneous (grease, cement, etc.) | 94.37             | 1.65                              |
| <b>TOTAL</b>                         | <b>\$5,706.66</b> |                                   |

Supply Cost Breakdown

1 - Diamonds

Cost of Diamonds by Type and Month and Per Foot Drilled

| <u>Month</u>                            | <u>Type</u>       |                  |                | <u>Feet<br/>drilled</u> | <u>Cost per<br/>foot</u> |
|---|-------------------|------------------|----------------|-------------------------|--------------------------|
|   | <u>Bartz</u>      | <u>#2 Carbon</u> | <u>Congo</u>   |                         |                          |
| May                                     | \$ 114.00         |                  |                | 128                     | \$ .266                  |
| June                                    | 309.34            | \$ 2.00          |                | 329                     | .948                     |
| July                                    | 526.56            |                  | \$15.15        | 490                     | 1.105                    |
| Aug.                                    | 707.10            | 62.00            |                | 806                     | .954                     |
| Sept.                                   | 1,719.72          | 56.00            |                | 956                     | 1.856                    |
| Oct.                                    | 203.10            | 187.50           |                | 230                     | 1.698                    |
| Nov.                                    | 716.58            |                  | 18.03          | -                       | -                        |
| <b>Total</b>                            |                   | <b>\$307.50</b>  |                |                         |                          |
| <b>Less</b>                             |                   | <b>31.00</b>     |                |                         |                          |
| <b>Total</b>                            | <b>\$4,296.90</b> | <b>\$276.50</b>  | <b>\$33.18</b> | <b>3,239'</b>           | <b>\$1.423</b>           |
| <b>Grand Total Diamonds: \$4,606.58</b> |                   |                  |                |                         |                          |

Summary of Diamond Costs

|                                      |                      |                   |
|--------------------------------------|----------------------|-------------------|
| Bartz                                | 716.15 cts. @ \$6.00 | \$4,296.90        |
| #2 Carbon                            | 5.53 cts. @ \$50.00  | 276.50            |
| Congo                                | 11.06 cts. @ \$3.00  | 33.18             |
| <b>Total cost of diamonds</b>        |                      | <b>\$4,606.58</b> |
| <b>Total feet drilled</b>            |                      | <b>3,239</b>      |
| <b>Diamond cost per foot drilled</b> |                      | <b>\$1.423</b>    |

D.D. GARbutt SHAFT MAY - NOVEMBER, 1946

Supply Cost Breakdown (Continued)

2 - Drill equipment and tools

Core barrels

|     |     |     |                |                 |
|-----|-----|-----|----------------|-----------------|
| EXE | 8'  | 1 @ | \$27.25        | \$27.25         |
| EX  | 8'  | 1 @ | \$27.25        | \$27.25         |
| EX  | 8'  | 2 @ | \$15.00 (used) | \$30.00         |
| AX  | 10' | 2 @ | \$22.50        | \$45.00         |
| AX  | 5'  | 1 @ | \$20.00        | \$20.00         |
| ?   | 10' | 1 @ | \$40.95        | \$40.95         |
|     |     |     |                | <u>\$190.45</u> |

Bits

|            |  |     |         |                 |
|------------|--|-----|---------|-----------------|
| EXTC       |  | 1 @ | \$ 7.65 | \$ 7.65         |
| EXE        |  | 7 @ | \$ 5.25 | \$36.75         |
| EXE (plug) |  | 2 @ | \$ 6.35 | \$12.70         |
| EX         |  | 7 @ | \$ 4.50 | \$31.50         |
| AXTC       |  | 1 @ | \$11.00 | \$11.00         |
| AX         |  | 7 @ | \$ 7.65 | \$53.55         |
|            |  |     |         | <u>\$153.15</u> |

Reamer Shells

|                         |  |      |                      |                 |
|-------------------------|--|------|----------------------|-----------------|
| EXE                     |  | 1 @  | \$10.45              | \$10.45         |
| EXE                     |  | 11 @ | \$ 4.00              | \$44.00         |
| EX                      |  | 4 @  | \$ 4.00              | \$16.00         |
| EX                      |  | 3 @  | \$ 2.50              | \$ 7.50         |
| AX                      |  | 14 @ | \$ 4.75              | \$66.50         |
| AX                      |  | 7 @  | \$ 4.75 (level wall) | \$33.25         |
| EX                      |  | 3 @  | \$ 6.00              | \$18.00         |
| EX to AX casing adapter |  | 1 @  |                      | \$ 5.30         |
|                         |  |      |                      | <u>\$201.00</u> |

Casing

|                           |  |     |  |                 |
|---------------------------|--|-----|--|-----------------|
| EX to 1 1/2" pipe adapter |  | 1 @ |  | \$ 2.75         |
| EX 175' @ 804             |  |     |  | 140.00          |
| EX 2-5' lengths @ \$4.50  |  |     |  | 9.00            |
| AX plugs 2 @ \$5.00       |  |     |  | <u>10.00</u>    |
|                           |  |     |  | <u>\$161.75</u> |

Miscellaneous tools and equipment

|   |                 |
|---|-----------------|
| Hook jaws for 18" rigid wrench 4 @ \$1.50   | \$ 6.00         |
| Hook jaws for 18" rigid wrench 6 @ \$1.29   | 7.74            |
| Hook jaws for 24" rigid wrench 2 @ \$2.45   | 4.90            |
| Hook jaws for 18" rigid wrench 4 @ \$ .50   | 2.00            |
| Hook jaws for 18" rigid wrench 4 @ \$ .43   | 1.72            |
| Steel cable 3/8" 60' @ 20¢                  | 12.00           |
| Steel cable 3/8" 60' 6 @ \$14.30            | 85.80           |
| Foot clamp jaws EAB EKE 2 @ \$5.25          | 10.50           |
| Foot clamp jaws EAB AX 6 @ \$5.25           | 31.50           |
| Foot clamp jaws EAB EK 2 @ \$5.25           | 10.50           |
| Core springs AX 6 @ \$1.10                  | 6.60            |
| E rod jaws for BB clamp 2 @ \$5.25          | 10.50           |
| A-E hoisting plug bolt 1 @ \$2.50           | 2.50            |
| A pin to E pin rod coupling 1 @ \$3.25      | 3.25            |
| Feed nut gears 200-275 BB #2                | 24.00           |
| Brass shifter collar 1 @ \$4.50             | 4.50            |
| Hinge bolts, nuts 963c 2 @ \$17.00          | 34.00           |
| Bushings, check, bolts for BB #2 2 @ \$4.50 | 9.00            |
| Bushings, brass, EAB water swivel, plain    | 5.00            |
| Bushings, chuck 1 @ \$2.00                  | 2.00            |
| Bushings, chuck 1 @ \$3.50                  | 3.50            |
| Bolt, chuck 1 @ 75¢                         | .75             |
| Bolt, chuck 1 @ \$1.00                      | 1.00            |
| Hose, 3/4 x 4 50'                           | 19.60           |
| Packing, Gerlock 1/2", 6'                   | .50             |
|   | <u>\$299.36</u> |

TOTAL COST DRILL EQUIPMENT AND TOOLS . . . . . \$1,005.71

3 -- Miscellaneous

|                           |              |
|---------------------------|--------------|
| <u>Cement</u>             |              |
| Lucrile 2 sacks           | \$ 7.65      |
| Lucrile 4 sacks           | 14.28        |
| Cal seal 2 sacks plus tax | <u>11.57</u> |
|                           | \$ 33.50     |
| <br>                      |              |
| Batteries tape            | \$ .51       |
| String 3 balls plus tax   | 3.09         |
| Grease 1 bbl.             | 36.72        |
| Grease 100#               | 11.74        |
| Grease 75#                | <u>8.51</u>  |
|                           | \$ 60.57     |

TOTAL COST MISCELLANEOUS . . . . . \$ 94.37

COLORADO, LAKE COUNTY  
LEADVILLE DISTRICT  
YBEX-SUNDAY AREA  
GARBUTT SHAFT  
DIAMOND DRILLING COSTS

Total feet drilled: 3955

| <u>Shale</u> | <u>Sandstone and Grit</u> | <u>Limestone</u> | <u>Porphyry</u> | <u>Sulfides</u> |
|--------------|---------------------------|------------------|-----------------|-----------------|
| 23%          | 27%                       | 5%               | 38%             | 3%              |

The rock types and physical conditions of this area are essentially the same as those of the Eclipse area, with the exception that in and near the sulfide zones in the Garbutt considerable jasperoid (siliceous replacement of dolomite) with associated vugs and cavities was encountered. This material is exceptionally difficult to drill and to make recoveries in.

Bit consumption was unusually high in the Garbutt, higher in the Eclipse. This was in part due to the use of worn-out leaky rods, resulting in low water pressures at the bit face.

DIAMOND DRILLING COST AT ECLIPSE SHAFT, COLORADO

January - April, 1947

Drilling was done under provisions of a contract at the rates indicated below. Indirect costs (overhead) and capital charges are not included.

Summary of Diamond Drilling Costs

|                        |             |
|------------------------|-------------|
| Number of holes        | 3           |
| Total cost             | \$11,267.70 |
| Total feet drilled     | 2,218'      |
| Cost per foot drilled  | \$5.0801    |
| Average length of hole | 739.3'      |

Breakdown of Total Cost

| <u>Item</u>                | <u>Cost</u>  | <u>Cost per foot drilled</u> | <u>% of total Cost</u> |
|----------------------------|--------------|------------------------------|------------------------|
| Drilling 2218' @ \$5.00    | \$11,090.00  | \$5.0000                     | 98.42                  |
| Cementing 23 hrs. @ \$4.50 | 103.50       | 0.0467                       | 0.92                   |
| Miscellaneous              |              |                              |                        |
| Labor \$70.40              |              |                              |                        |
| Tax, payroll \$1.69        |              |                              |                        |
| Fed. tax \$2.11            | <u>74.20</u> | <u>0.0334</u>                | <u>0.66</u>            |
| TOTAL                      | \$11,267.70  | \$5.0801                     | 100.00                 |

COLORADO, LAKE COUNTY  
LEADVILLE DISTRICT  
IBEX-SUNDAY AREA  
ECLIPSE SHAFT  
DIAMOND DRILLING COSTS

| <u>Shale</u> | <u>Total feet drilled: 2218</u> |  | <u>Limestone</u> | <u>Porphyry</u> | <u>Breccia</u> |
|--------------|---------------------------------|--|------------------|-----------------|----------------|
|              | <u>Sandstone and Grits</u>      |  |                  |                 |                |
| 27%          | 29%                             |  | 8%               | 24%             | 5%             |

The percentage not accounted for represents 100% core losses, gouges, etc. The shale ranges from soft to medium hard; is generally argillaceous, sometimes calcareous and/or carbonaceous. The ss and grits vary from medium hard, dense, argillaceous sandstones to hard, dense, rather coarse, quartzitic arkose grits, with a minor amount of very hard, almost pure quartzite. The limestone is mainly a medium to fine crystalline dolomite. The breccia is a mixture of porphyry and shale fragments. In general the rocks are firmly consolidated, ranging in age from Pre-Cambrian to Middle Pennsylvanian. The porphyry is a moderately hard, dense monzonite, medium to fine grained, with variable amounts of silicification and hydrothermal alteration. Numerous faults and slips are present in all rock formations. The drilling rate was on the average faster and the bit consumption lower in the porphyry than in the sediments.

TO ACCOMPANY REPORT  
 DATED: Dec. 18, 1944  
 BY: Philip J. Carley  
 FILE: Morning - Star  
 10/22/45

**MAP OF  
 PORTION OF HUNTER DIST.  
 NORTH OF  
 MORNING AND STAR MINES**

Sc - 1" = 200'

JUNE 1944  
 SEPT. 1948

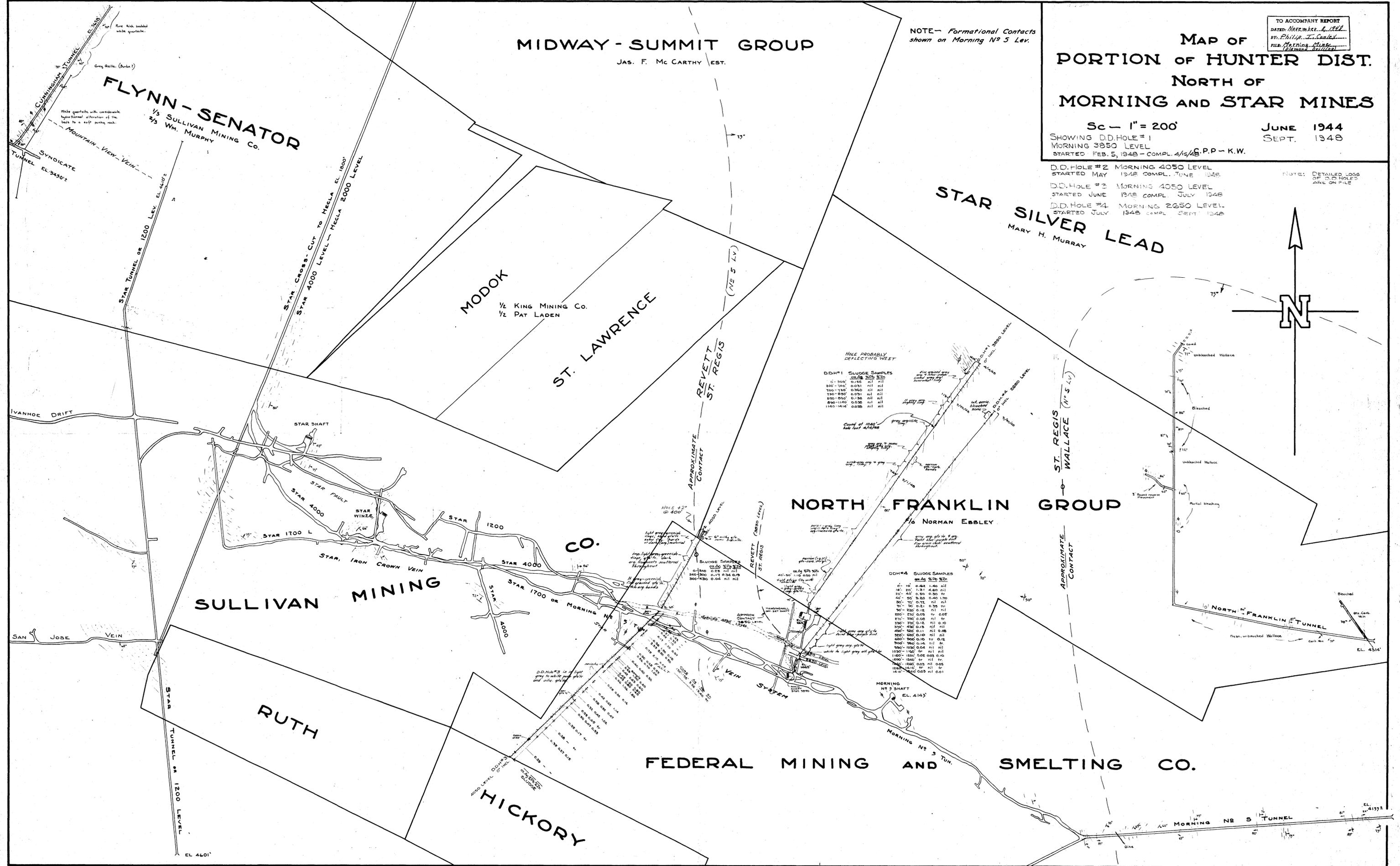
SHOWING D.D. HOLE #1  
 MORNING 3850 LEVEL  
 STARTED FEB. 5, 1948 - COMPL. 4/15/48  
 G.P.P. - K.W.

D.D. HOLE #2 MORNING 4050 LEVEL  
 STARTED MAY 1948 COMPL. JUNE 1948  
 D.D. HOLE #3 MORNING 4050 LEVEL  
 STARTED JUNE 1948 COMPL. JULY 1948  
 D.D. HOLE #4 MORNING 2650 LEVEL  
 STARTED JULY 1948 COMPL. SEPT. 1948

NOTE: DETAILED LOGS  
 OF D.D. HOLES  
 ARE ON FILE

NOTE - Formational Contacts  
 shown on Morning N<sup>o</sup> 5 Lev.

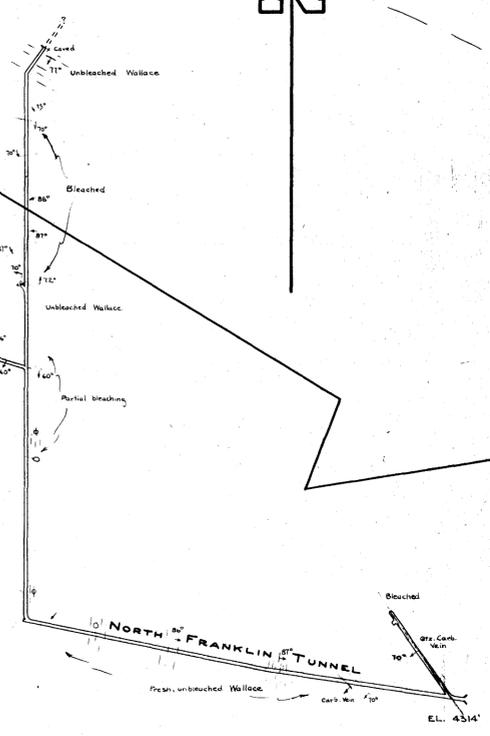
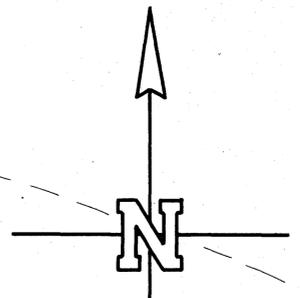
**MIDWAY - SUMMIT GROUP**  
 JAS. F. Mc CARTHY EST.



HOLE PROBABLY DEFLECTING WEST

| DDH#1 SLUDGE SAMPLES | Gr. Ag. | % Pb | % Zn |
|----------------------|---------|------|------|
| 0-500                | 0.15    | nil  | nil  |
| 500-1000             | 0.031   | nil  | nil  |
| 100-150              | 0.350   | nil  | nil  |
| 150-200              | 0.031   | nil  | nil  |
| 200-250              | 0.138   | nil  | nil  |
| 250-300              | 0.028   | nil  | nil  |
| 300-350              | 0.028   | nil  | nil  |
| 350-400              | 0.028   | nil  | nil  |
| 400-450              | 0.028   | nil  | nil  |
| 450-500              | 0.028   | nil  | nil  |
| 500-550              | 0.028   | nil  | nil  |
| 550-600              | 0.028   | nil  | nil  |
| 600-650              | 0.028   | nil  | nil  |
| 650-700              | 0.028   | nil  | nil  |
| 700-750              | 0.028   | nil  | nil  |
| 750-800              | 0.028   | nil  | nil  |
| 800-850              | 0.028   | nil  | nil  |
| 850-900              | 0.028   | nil  | nil  |
| 900-950              | 0.028   | nil  | nil  |
| 950-1000             | 0.028   | nil  | nil  |
| 1000-1050            | 0.028   | nil  | nil  |
| 1050-1100            | 0.028   | nil  | nil  |
| 1100-1150            | 0.028   | nil  | nil  |
| 1150-1200            | 0.028   | nil  | nil  |
| 1200-1250            | 0.028   | nil  | nil  |
| 1250-1300            | 0.028   | nil  | nil  |
| 1300-1350            | 0.028   | nil  | nil  |
| 1350-1400            | 0.028   | nil  | nil  |
| 1400-1450            | 0.028   | nil  | nil  |
| 1450-1500            | 0.028   | nil  | nil  |

| DDH#4 SLUDGE SAMPLES | Gr. Ag. | % Pb | % Zn |
|----------------------|---------|------|------|
| 0-10                 | 0.02    | 1.46 | nil  |
| 10-20                | 1.31    | 4.60 | nil  |
| 20-40                | 0.80    | 0.90 | fr   |
| 40-60                | 0.50    | 0.40 | 1.70 |
| 60-80                | 0.12    | nil  | nil  |
| 80-100               | 0.21    | 0.35 | fr   |
| 100-120              | 0.12    | nil  | nil  |
| 120-140              | 0.05    | fr   | fr   |
| 140-160              | 0.08    | nil  | fr   |
| 160-180              | 0.10    | fr   | fr   |
| 180-200              | 0.11    | fr   | fr   |
| 200-220              | 0.10    | fr   | fr   |
| 220-240              | 0.10    | fr   | fr   |
| 240-260              | 0.10    | fr   | fr   |
| 260-280              | 0.10    | fr   | fr   |
| 280-300              | 0.10    | fr   | fr   |
| 300-320              | 0.10    | fr   | fr   |
| 320-340              | 0.10    | fr   | fr   |
| 340-360              | 0.10    | fr   | fr   |
| 360-380              | 0.10    | fr   | fr   |
| 380-400              | 0.10    | fr   | fr   |
| 400-420              | 0.10    | fr   | fr   |
| 420-440              | 0.10    | fr   | fr   |
| 440-460              | 0.10    | fr   | fr   |
| 460-480              | 0.10    | fr   | fr   |
| 480-500              | 0.10    | fr   | fr   |
| 500-520              | 0.10    | fr   | fr   |
| 520-540              | 0.10    | fr   | fr   |
| 540-560              | 0.10    | fr   | fr   |
| 560-580              | 0.10    | fr   | fr   |
| 580-600              | 0.10    | fr   | fr   |
| 600-620              | 0.10    | fr   | fr   |
| 620-640              | 0.10    | fr   | fr   |
| 640-660              | 0.10    | fr   | fr   |
| 660-680              | 0.10    | fr   | fr   |
| 680-700              | 0.10    | fr   | fr   |
| 700-720              | 0.10    | fr   | fr   |
| 720-740              | 0.10    | fr   | fr   |
| 740-760              | 0.10    | fr   | fr   |
| 760-780              | 0.10    | fr   | fr   |
| 780-800              | 0.10    | fr   | fr   |
| 800-820              | 0.10    | fr   | fr   |
| 820-840              | 0.10    | fr   | fr   |
| 840-860              | 0.10    | fr   | fr   |
| 860-880              | 0.10    | fr   | fr   |
| 880-900              | 0.10    | fr   | fr   |
| 900-920              | 0.10    | fr   | fr   |
| 920-940              | 0.10    | fr   | fr   |
| 940-960              | 0.10    | fr   | fr   |
| 960-980              | 0.10    | fr   | fr   |
| 980-1000             | 0.10    | fr   | fr   |



**FEDERAL MINING AND SMELTING CO.**

**SULLIVAN MINING**

**NORTH FRANKLIN GROUP**

**MODOK**  
 1/2 KING MINING CO.  
 1/2 PAT LADEN

**FLYNN - SENATOR**  
 1/3 SULLIVAN MINING CO.  
 2/3 WM. MURPHY

**RUTH**

**HICKORY**

**STAR SILVER LEAD**  
 MARY H. MURRAY

CO.

1/3 NORMAN EBBLEY

IVANHOE DRIFT

SAN JOSE VEIN

SYNDICATE TUNNEL EL. 3430'

STAR TUNNEL OR 1200 LEV. EL. 4102'

STAR CROSS-CUT TO HECLA EL. 1800'  
 STAR 4000 LEVEL - HECLA 2000 LEVEL

REVETT ST. REGIS (N<sup>o</sup> 5 LV.)  
 APPROXIMATE CONTACT

ST. REGIS WALLACE (N<sup>o</sup> 5 LV.)  
 APPROXIMATE CONTACT

STAR TUNNEL OR 1200 LEVEL  
 EL. 4601'

MORNING N<sup>o</sup> 2 SHAFT  
 EL. 4143'

MORNING N<sup>o</sup> 5 TUNNEL

EL. 4132'