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ENGINEERING GEOLOGY - DRILLING

REPORT  
on  
the El Transito gold and silver mine,  
Honduras.

April  
18  
1975

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Maps: Nos. 1 - 8.

Foreword. This report is based on 1962-63 maps of the Rosario Resources Corporation, Honduras, and 1973-74 exploration maps and reports by Honduras Minera Placer, S de R.L., Honduras. The El Transito mine is owned by Mrs. G.T. Pekarik of Tegucigalpa, D.C.

#### ABSTRACT

The El Transito gold and silver property is located in south Honduras, near the Pacific port of San Lorenzo, in a gold zone. The veins are of the volcanic type. Sizes, values and topography indicate possibilities of economic open-cut mining at the present gold prices. Preliminary metallurgical tests have shown very favorable results. Some mining has been carried out in the past, mainly prior to 1920.

#### SUMMARY

The property is located about 25 km westnorthwestwards of the port of San Lorenzo, south Honduras, close to the Pan-American Highway.

The general area is characterized by low, rolling hills of volcanics. Alluvial flats extend from the vicinity to the sea. The area is located within a definite gold and silver zone extending from El Salvador into adjoining Nicaragua.

The veins, as far as presently known, comprise two main zones, the El Turbio and the Veta Sta. Anita zones, and ten or more relatively unexplored veins within the El Transito area, plus unexplored known and indicated veins in the surrounding area.

The El Turbio vein dips from about 40 to 15 degrees northwards. The known mineralized part is about 300 m in length, and up to 30 m or more in width in places.

The Veta Sta. Anita zone dips about 32 degrees eastwards in the south, with an aggregate width of 38 m shown by drilling. It is relatively narrow in the north, where it dips about 70 degrees eastwards.

This zone is quite unexplored. It may be about 600 m in length, or more. Narrow, high-grade ore shoots occur.

Both zones have unexplored length & depth extensions.

An "indicated ore reserves" estimate by a previous worker gives the following figures:

Total metal value in the El Turbio and Veta Sta. Anita zones:  
Doll. 36,306,000.-

Total ore reserves: 1,197,000 sh. tons.  
Average metal value: Doll. 30.30/t.  
Production: 500 tons per day over six years.  
Basis: Gold - 170 and silver 4 Dollars per oz.

If the estimate would be reasonably correct, open-cut mining would be profitable at present metal prices. Methodical exploration may provide additional reserves of economic interest.

Preliminary metallurgical tests of the material have been very favorable.

RECOMMENDATIONS

A. The El Transito and adjoining areas.

1. Compile all relevant information on one map.

B. The El Transito area.

B-1. The El Turbio zone.

- 2. Evaluate the ore shoot further, above and below the 30 and 34 m levels.
- 3. a. Explore the westernmost extension along the surface further by methodical sampling of fresh material exposed by blasting.
- b. Follow-up by diamond drilling, if found justified.
- c. Trace possibly concealed extensions by geochemical surveys, if found warranted.
- 4. Study the El Turbio zone relationship to the east-end fault, as well as the relationship of any mineralization to the fault.
- 5. Try to clarify the significance of the chalcedony encountered downdip in the drill hole No. 13. (Possibly by microscopic studies.)
- 6. If the "4" results indicate that the chalcedony relates to a separate quartz mineralization cycle, drill one or a few holes downdip to determine additional ore shoot signs, if any.
- 7. Plot the surface & subsurface geology, including the drill-

x/  
at least of parts of the El Turbio zone

hole results, and relevant geologic cross sections to obtain further guidance in search and evaluation.

B-2. The Veta Sta. Anita zone, and the rest of the area.

8. Plot the surface and the subsurface geology (ref. drilling results), and prepare miscellaneous geologic cross-sections of help in studying the mineralization characteristics, and planning exploration. Show values, vein widths, etc.
9. Plan further exploration on the basis of the "8" results.
10. Apply geochemistry and geophysics in the search for concealed veins.  
(Electric resistivity and potential methods are useful in locating steeply dipping quartz veins.)

C. The area adjoining the El Transito area.

11. Plot the surface and the subsurface geology, values and vein widths, etc., included.  
Prepare geologic cross sections, as required.  
Plan further exploration with due regard to the "1" map.

D. General.

Determine over-all space zoning characteristics involving gangue minerals as well as metallic minerals for the purpose of locating the most favorable sub-areas and veins for detailed exploration.

GENERAL

1. Location. The El Transito mine is located in south Honduras, close to the Pan-American Highway, and within 25 km distance from the San Lorenzo deep-sea port. See maps Nos. 1 & 2.
2. Topography. Occasional hills occur in the area. A mine area hill rises about 100 m above the plain.
3. Structures. South Honduras: A major fault cuts across south Honduras in a northwestern direction, about 6-7 km from the El Transito mine.  
A dominant north-striking fault, possibly related to the Honduras graben, is located about 20-25 km westwards of the property.
- Mine area and vicinity: The most important structure appears to be a WNW trending zone of strike-slip faulting. Associated tensional structures suggest a left-lateral sense of slip.  
Another important structural direction is represented by NNE to NE striking shears and faults.

4. Mineralization. South Honduras: South Honduras is part of a post-Laramide gold and silver zone extending into El Salvador, Nicaragua, and northeastwards into Olancho province, Honduras (ref. 1).  
The gold and silver mineralization in South Honduras and eastern El Salvador occurs apparently mainly in quartz veins of the volcanic type.  
(One of the larger El Salvador gold mines is the Monte - cristo mine. It is located about 50 km westnorthwestwards of the El Transito mine. The veins occur in andesite flows. They are one to two km long, and one to fifteen m wide. The depth extensions are about 300 m. Gangue minerals: Silica, chalcedony and chlorite.)

The El Transito area:

a. Mineralized structures -

The main mineralization is represented by some quartz veins possibly up to 600 m in length and 40 m in width. About 10 additional, poorly explored or unexplored veins occur in the vicinity.  
Additional veins are exposed about 1.5 km southeastwards in the Bladros subarea.

The largest of said veins, the El Turbio, is located in the foot wall of the WNW trending fault. See map No. 3. It dips from 40 to 15 degrees northwards. The western section dip may be less.

The westernmost extension, indicated by large outcrops, has apparently not been explored.

A second vein zone, with a curved, northwards strike, the Veta Sta. Anita, is located east and southeastwards of the El Turbio vein. See map No. 3.

This zone is relatively narrow in the north and dips at about 70 degrees east. In the south it widens out and has a dip of about 32 degrees.

One drill hole, PRT 9, shows two zones with an aggregate thickness of 30 m separated by a 10 m non-silicified zone. The total zone length may be 600 m or more.

The locations of the additional 10 veins are indicated on map No. 4.

b. Wallrock alteration, etc. -

The El Turbio hanging wallrocks are soft and incompetent, reportedly near the surface only, because of fracturing and argillitic(?) alteration. This alteration may be due to near-surface weathering.

The footwall rocks are relatively unfractured and unaltered.

Pyritic alteration extends for considerable distances out into both walls. One drill hole, PRT 12, shows a 16 m extension into the unaltered footwall.

c. Gangue minerals -

The El Turbio zone shows chalcedony and white quartz. Gray and vuggy quartz occur at depth, where chalcedony has also been encountered, however.

The Veta Sta. Anita shows surface chalcedony with drusy cavities and sugary textured quartz, white color.

Several thin veins on the eastern and southern part of the El Transito ridge carry quartz and chalcedony.

Calcite veins do also occur.

d. Metallic minerals -

Generally, pyrite is common. Gold occurs in the pyrite as well as free, very finegrained. It appears to occur particularly with gray quartz.

Silver is closely associated with the gold, probably occurring as electrum.

Minor amounts of chalcopyrite, galena and sphalerite have been observed.

e. Values -

e-1. The El Turbio zone.

An about 300 m long and up to about 40 m wide gold and silver-bearing quartz zone has been sampled in detail along levels 30 and 34 m, as shown on map No. 6. Only the gold values were determined and plotted on the map. Some are above one oz/ton.

The highest assay value had on the 0 level was 0.27 oz/ton.

An up to about 50 m high ore shoot plunging about 12 degrees to the northwest is indicated. It passes over the present 0 level shown.

e-2. The Veta Sta. Anita zone.

Smaller, but high-grade ore shoots may occur in this zone. Additional exploration is required.

e-3. So far only the scattered veins located eastwards and southeastwards of the El Turbia zone have shown values of possible interest. Grab-sampling has shown frequent values of 1/3 oz/t and above. See map No. 4.

The areas adjoining the El Transito area:

The areas are relatively unexplored as a whole. Recent exploration has so far not shown any vein of particular interest.

5. Explo- a. Geological surveys, excavating and drilling.  
ration.

The property has been discontinuously explored for a number of years. Methodical reconnaissance drilling was not commenced until 1973. Maps Nos. 3, 4, 5, 6, and 7 indicate main work done.

b. Geochemical surveying.

Apparently no geochemical surveying was carried out prior to 1973. Only very limited work has been done. Of possible interest: An 150 x 450 sq.m. area located northwards of drillhole No. PRT 3, in the coordinate 10 000 N vicinity. See map No. 8.

The C horizon, weathered bedrock, was sampled whenever possible.

Results: Some anomalies which justify detail studies were had. Silver was the most useful element.

c. Geophysical surveying.

Magnetic: A Jalander vertical flux gate magnetometer was used over an area on the southeast extension of the El Transito mineralized structure (Amparo). It furnished some structural information.

Electromagnetic: A Ronka unit was used in the same area. The best anomaly had was found to be due to pyrite.

6. Ore The writer has not made any estimate.  
reserves.

The following estimate by a previous worker is available:

a. The El Turbia main zone.

Indicated ore reserves: 882,000 sh tons. at Doll. 30.20 per ton, basis gold price = Doll. 170.-/t, silver = 4.-/t.

(Estimate basis: A 300 m long, 70 m high, and 15 m wide zone.  
 Tonnage: 315,000 cu m x 2.8 = 882,000 sh tons.  
 Grade: 0.17 oz of gold and 1.00 oz of silver/ton.  
 Values: 0.17 oz x 96% = 0.16 oz of gold/ton.  
           1.00 oz x 76% = 0.76 oz of silver/ton.  
           0.16 oz x Doll.170.- = Doll.27.70/ton for gold.  
           0.76 oz x Doll.4.- = Doll.3.-/ton for silver.  
 Total metal value = Doll.30.20/ton.)

b. The Veta Sta. Anita zone.

Indicated ore reserves: 315,000 sh tons. at Doll.30.70 per ton.

(Basis: A 150 m long, 100 m high, and 7.5 m wide zone.  
 Tonnage: 112,500 x 2.8 = 315,000 sh tons.  
 Grade: 0.176 oz of gold and 0.66 oz of silver.  
 Values: 0.176 oz x 96% = 0.169 oz of gold/ton.  
           0.66 oz x 76% = 0.50 oz of silver/ton.  
           0.169 oz x Doll.170.- = Doll.28.70 for gold.  
           0.50 oz x Doll.4.- = Doll.2.- for silver.  
 Total metal value = Doll.30.70/ton.)

c. Combined zones ("a" + "b").

Total indicated ore reserves so far = 1,197,000 sh tons.  
 Average total metal value per ton = Doll.30.30 / sh ton.  
 Total metal value = Doll.36,306,000.-  
 Production: 500 tons/day over six years time.

7. Metal-lurgy.

According to metallurgical tests, the ore is amenable to flotation with excellent recovery: 96% for gold, and 76% for silver.

8. Mining.

The property has been intermittently exploited. The main period of gold production was prior to 1920. Local villagers have carried out shallow hand mining over the past 50 years.

## DISCUSSION

The El Transito property and the adjoining area are favorably located geologically, close to major faults, and in a pronounced gold zone.

The areas have not been fully explored. Methodical studies of underground extensions were commenced in 1973 on a reconnaissance basis.

Unexplored veins of possible interest include those eastwards and southeastwards of the El Turbio zone, judging from grab sampling results.

The area in general, like in other gold areas, could possibly carry veins which have been slightly eroded only, showing low values, or do not outcrop at all, which therefore could have an economic gold & silver potential at depth.

The gangue minerals do at times provide clues as to possible mineralization depth extensions.

Chalcedonic quartz does thus usually occur in the upper part of a vein of the volcanic type. It may change into porcelainic texture quartz at depth, with the best gold & silver values, followed by white, stony quartz with crystalline texture and vugs lined with quartz crystals. The last mentioned type of quartz may relate to very low-grade or barren material.

Chalcedonic quartz occurs at El Transito, both at the surface and also at depth (ref. drill hole No. 13).

On the other hand, vuggy quartz, indicating the lower part of a vein, is found together with the underground chalcedony. The latter could then possibly represent another quartz mineralization stage, and, consequently, additional related quartz masses at depth. Microscopic examinations of the gangue minerals involved would perhaps help to clarify the matter.

The gray quartz, which indicates gold concentrations, has been observed at depth, in drill hole No. 12.

The sugary texture of some surface quartz may be due to weathering.

The El Turbio zone assay maps show gold values and structures of interest at today's gold prices, considering the open-cut mining possibilities, and the favorable metallurgical character of the ore.

## CONCLUSIONS

The El Transito area and the adjoining area deserve some additional follow-up exploration.

The El Turbio zone should be further explored at depth, if additional quartz mineralization stages related to the chalcodyny encountered at depth are indicated.

The relatively wide, but unexplored west extension should be investigated. Large quartz volumes are indicated. Information on gold & silver values is required.

The east-end relationship to the fault, any mineralization displaced by it, or related to it, should be investigated.

The Santa Anita zone has been less eroded than the El Turbia zone, which could mean a certain intact mineralization potential at depth.

It should be further explored, particularly the north part. The latter remains unexplored along both length- and depth extensions. Gold and silver values of possible economic interest are indicated.

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The other known and indicated veins in the El Transito area, numbering possibly over 10, should be explored methodically.

Epithermal vein zones, which could mean narrow, and low-grade surface showings, with higher values at depth, however, should be searched for.

New, concealed veins in the general area should be explored for by means of geologic mapping, geochemical and geophysical surveys, as applicable, with due regard for work previously done.

-

If the estimated "indicated ore reserves" of a part of the Turbio zone, and of the Veta Sta. Anita zone would be reasonably correct, and the Veta Sta. Anita mining costs sufficiently low, a six years economical mining production based on 500 tons/day and present gold prices would be feasible.

This production would be complemented with whatever reserves of economic interest further, systematical exploration would result in.

  
John Synhelm

JS/lrs

## REFERENCE

1. Paper on "Gold in Honduras, where to find it, etc." presented before the Geological Congress in Teg., -75.

INDICATED TRANSITO ORE RESERVES ESTIMATE

Based on 30-34 Level Assay Plan and on Diamond Drill Holes No. 3, No. 4 & No. 11 Assay Results, & Drawing No. J-61.

TURBIO ORE ZONE:

143,539 cu. m. x 2.8 = 401,900 Short Tons.

Grade = .21 oz. Au.; 2.00 oz. Ag.

Recoverable:

.21 x 96% = .20 oz. Au.; 2.00 oz. x 76% = 1.50 oz. Ag.

.20 oz. x \$600.00 = \$120.00 for Au.; 1.50 x \$35.00 = \$52.50 for Ag.

Metal Value = \$172.50 per Short Ton.

401,900 Tons x \$172.50 = \$69,327,000.00

VETA SANTA NITA ORE ZONE:

150 M. Long, 100 M. High, 7.5 M. Wide.

112,500 x 2.8 = 315,000 Short Tons.

Grade = .176 oz. Au.; .66 oz. Ag.

Recoverable:

.176 oz. x 96% = .169 oz. Au., .66 oz. x 76% = .50 oz. Ag.

.169 oz. x \$600.00 = \$101.40 for Au., .50 oz. x \$35.00 = \$17.50 for Ag.

Metal Value = \$118.90 per Short Ton.

315,000 Tons x \$118.90 = \$ 37,453,000.00

Total Metal Value in Turbio & Santa Anita Ore Zones = \$106,780,000.00

Total Ore Reserves = 716,900 Short Tons.

Average Metal Value = \$148.80 per Short Ton.

4 years Ore Reserves at 500 T.P.D. PRODUCTION.

DENVER EQUIPMENT DIVISION  
ORE TESTING LABORATORY  
Denver, Colorado

Mr. L. F. Pekarik  
Apartado Postal 1085  
Tegucigalpa, Honduras - C.A.

Ref: Our Order 05-156577  
Gold Ore from Honduras

Dear Mr. Pekarik:

We are pleased to submit the following results of laboratory ore tests conducted upon your sample of gold-silver ore.

Sample Identification:

We received on March 21, 1973 one box of ore sample, gross weight 120-pounds, via prepaid air freight. The sample was given our Receiving No. 5644 and was held in storage pending receipt of your authorization to proceed with the ore tests.

Object of Tests:

The object of the tests, as outlined in your Information Required for Test which was received in your letter of authorization dated February 20, 1974, is to conduct a Denver Mineral Jig test, flotation for gold and silver, corduroy blankets and barrel amalgamation of jig flotation and corduroy products. However, we were authorized in your subsequent letter dated March 20, 1974 to substitute gravity table concentration instead of corduroy blankets on account of the impossibility of being able to recover an accurate concentrate from corduroy in a laboratory batch test.

Description of Ore

The sample received for the tests represents a quartz vein-type ore which contains most of the gold in a free state but in a very fine state of division and with a very small amount of oxides and sulphides. A closely panned concentrate produced from the crushed ore at minus 10-mesh amounted to only one or two grams from 200-grams and consisted of a mixture of magnetite, hematite and scattered grains of pyrite and pyrrhotite. A few scattered grains of free gold were observed with the aid of a binocular microscope. The ore crushed to minus 10-mesh when pulped with an equal weight of Denver city water having a pH of 7.6 produced a pulp water having a pH of 6.7



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ORE TESTING LABORATORY  
Denver, Colorado

05-156577

Description of Test Results:

Test No. 1

This test was conducted by Denver flotation at a fine grind. A charge of the minus 10-mesh crushed ore was ground in the Denver 12" x 5" Ball Mill to minus 100-mesh and subjected to Denver "Sub-A" Flotation with reagents particularly applicable to the flotation of free gold. The test produced a rougher flotation concentrate at a ratio of concentration of 75.5-to-1 which assayed 17.96-oz./ton gold and 153.92-oz./ton silver and which contained 95.88-percent of the total gold and 76.74-percent of the total silver. Details of this test are reported on the attached Data Sheet No. 1.

Test No. 2

This test was a combined Denver Mineral Jig and Denver "Sub-A" Flotation test with barrel amalgamation of the jig concentrate. The test produced a cleaned jig concentrate at a ratio of concentration of 170-to-1 that assayed 12.66-oz./ton gold and 162.37-oz./ton silver and from which 28.1-percent of the total gold and 1.14-percent of the total silver was recovered by barrel amalgamation.

A rougher flotation concentrate was produced from the jig tailing that represented a ratio of concentration of 76.2-to-1, assayed 10.2-oz./ton gold, and 133.5-oz./ton silver and which contained 59.49-percent of the total gold and 48.8-percent of the total silver. The details of this test are reported on Data Sheets No.'s 2 and 3.

Test No. 3

This test was a flotation test conducted at an intermediate grind and with Reagent 208 substituted for a part of the Xanthate in an effort to increase silver recovery. The results show that a rougher flotation concentrate was produced at a ratio of concentration of 64.7-to-1 that assayed 14.27-oz./ton gold and 113.9-oz./ton silver and which contained 84.97-percent of the gold and 64.34-percent of the silver. Assays of the plus 200-mesh and minus 200-mesh fractions of the flotation tailing show that most of the losses occur in the minus 200-mesh fraction so the change of grind is not the reason for the lower recovery.

The results of this test are reported in detail on Data Sheet No. 4.



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Denver, Colorado

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Test No. 4

This test was an enforced amalgamation test conducted upon the head ore after grinding to minus 100-mesh which is comparable to the grind used for flotation in Test No. 1. The results of the test show a recovery of 47.76-percent of the total gold and 7.67-percent of the silver. The details of the test are reported on Data Sheet No. 5.

Test No. 5

This test was a gravity table test which was conducted in place of the requested corduroy blanket test. It was conducted at a minus 65-mesh grind and the resulting table concentrate was amalgamated in the usual procedure.

The results show the production of a gravity table concentrate at a ratio of concentration of 39-to-1 that assayed before amalgamation 7.73-oz./ton gold and 31.78-oz./ton silver and which contained 86.58-percent of the total gold and 26.12-percent of the total silver. The barrel amalgamation test of this concentrate showed 45.6-percent of the total gold and 2.81-percent of the total silver recovered in the amalgam.

The results of this test are shown in detail on Data Sheet No. 6.

Conclusions and Recommendations:

The ore represented by the sample tested responds to the flotation process exceptionally well when the ore is ground to minus 100-mesh and approximately 78.5-percent minus 200-mesh. The flotation concentrate is readily susceptible to flocculation to produce a fast settling and easily filterable pulp. The grindability of the ore is classed as being between "medium" and "medium hard" ore to grind when grinding time is compared to our standard grind test ores. The flowsheet that is recommended from this test program consists of Denver "Sub-A" Flotation with a Denver Mineral Jig in the grinding circuit as optional. While amalgamation of a jig concentrate in these tests produced 28.1-percent of the gold in bullion form and the recovery of silver was low, we are recommending the jig in case some coarser gold is encountered in the operation. This ore appears to be an ideal one for the application of the cyanidation process but since cyanide tests were not requested, probably for some good reason, we did not conduct them.

Barrel amalgamation tests were requested upon the flotation concentrate. However, our laboratory is not equipped to conduct a barrel amalgamation test on a flotation concentrate due to the difficulty in destroying the effect of the flotation reagents upon the mercury and due to the need for the amalgamation to be conducted in a continuous system. We have heard of one instance where amalgamation of a flotation concentrate was reported to be successful. They reported the use of a long revolving pipe into which the flotation concentrates were flowed together with live steam and chemicals and



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Conclusions and Recommendations (Continued):

succeeded in keeping the mercury from becoming fouled. A single batch laboratory amalgamation test might produce misleading results so it is recommended that since barrel amalgamation has been recommended for the jig concentrate, you can try the process on your flotation concentrate when the plant is in operation. The flotation concentrates produced in the tests were too small in amount to be cleaned by re flotation. However, once-cleaning of the concentrate has been recommended on the Flowsheet A-15223.

The reagents and conditions recommended are those used in our Test No. 1, shown on Data Sheet No. 1.

Very truly yours,

JOY MANUFACTURING COMPANY  
Denver Equipment Division

Clarence Thom  
Clarence Thom,  
Consulting Metallurgist

CT/dio

enc: Data Sheets. Flowsheet Drawing A-15223.





DENVER EQUIPMENT COMPANY  
 ORE TESTING DIVISION  
 Denver, Colorado

DENVER MINERAL JIG TEST DATA

Report No. 05-156577  
 Test No. 2

SAMPLE IDENTIFICATION: Receiving No. 5644 -- L. F. Pekarik

GRINDING:

Preliminary grinding time, minutes      Crushed minus 10-mesh ore  
 Final grinding time, minutes              10-minutes  
 Percent solids                                  67.0

JIG TEST PROCEDURE:

A charge of head ore crushed to minus 10-mesh was passed over the Denver Laboratory Mineral Jig using a fairly tight bed of 1-1/2 inch depth of steel shot with 1/2-inch of granular magnetite superimposed on the shot. The resulting tailing was then ground 10-minutes in the laboratory rod mill and the product again passed over the jig. The total jig concentrate was cleaned by panning and (continued below)...

PRODUCT	Percent Weight	ASSAYS			PERCENT RECOVERY		
		oz./ton			Au	Ag	
		Au	Ag				
Calculated Head Assay	100.00	0.22	3.58		100.0	100.0	
Amalgam from Jig Conct.	---	10.76	6.97		28.10	1.14	
Jig Amalgam Residue	0.59	2.24	158.80		5.86	25.45	
Calc. Jig Tailing	99.41	0.14	2.65		66.04	73.41	

NOTES:

Jig Test Procedure (Continued):

the cleaned concentrate subjected to barrel amalgamation. The jig tailing and cleaner tailing were reserved for further grinding and flotation the results of which are reported on Data Sheet No. 3.

SAMPLE IDENTIFICATION

Receiving No. 5644 -- L. F. Pekarik

TEST NO. 2

FLOTATION TEST PROCEDURE:

The total Denver Mineral Jig Tailing produced is reported on Data Sheet No. 2 was pail classified by decantation through a 48-mesh limiting screen and the sand product reground in the Denver 12" x 5" Ball Mill 10-minutes and this product again classified at 48-mesh and the final sands ground 10-minutes. The entire jig tailing after grinding to minus 48-mesh was then subjected to Denver "Sub-A" Flotation with reagents and conditions shown below.

Grinding and Treatment				Reagents: Pounds per ton heads-(2)						Screen Analysis		
Operation	2500-gms.	Time Min.	Percent Solids	pH	S.A.	B-4	Cr	Z-6			Rgr. Flot. Tail	Percent Weight
Grinding (1)		30	67.0	7.6	2.0	0.08	0.10	0.10			Mesh	
Rougher Conditioner		5	25.0	8.5	2.5	0.08	0.08	0.10			+48	0.05
Rougher Flotation		11	25.0	8.5	---	---	---	0.10			-48+65	2.00
											-65+100	9.40
											-100+150	13.20
											-150+200	18.20
											-200	57.15
											TOTAL	100.00

Grinding (1)  
Classification, mesh 48  
Time, minutes 10-10-10  
Sands reground, minutes

(2) Reagent Symbols: SA = Soda Ash  
B-4 = Barrett Coal Tar Creosote No. 4  
Cr = Cresylic Acid  
Z-6 = Potassium Amyl Xanthate

PRODUCT	Percent Weight	oz./ton		ASSAYS		PERCENT RECOVERY	
		Au	Ag			Au	Ag
Calc. Head Assay	99.41	0.15	2.65			66.04	73.41
Rougher Flot. Conct.	1.31	10.20	133.50			59.49	48.80
Rougher Flot. Tailing	98.10	0.015	0.90			6.55	24.61
RECAPITULATION -- TOTAL JIG AND FLOTATION TEST							
Head Sample Assay	---	0.25	2.16				
Calculated Head Assay	100.0	0.22	3.11			100.0	100.0
1 Jig Amalgam	---	10.76	6.97			28.10	1.14
2 Jig Amalgam Residue	0.59	2.24	158.8			5.86	25.45
3 Rougher Flotation Conct.	1.31	10.20	133.5			59.49	48.80
Rougher Flot. Tailing	98.10					6.55	24.61
Total Concentrate							
1, 2, and 3 combined	1.90	11.06	142.4			93.45	75.39

SAMPLE IDENTIFICATION

Receiving No. 5644 -- L. F. Perkarik

TEST NO. 3

FLOTATION TEST PROCEDURE:

This test was conducted at an intermediate grind and Reagent 208 was substituted for a part of the Z-6 in the hope that a higher recovery of the silver could be obtained. A charge of 2519-grams of head ore crushed to minus 10-mesh was ground 20-minutes and classified at 65-mesh. The resulting sand was then ground 15-minutes to all minus 65-mesh and the charge subjected to Denver "Sub-A" Flotation under conditions and with reagents shown below.

Grinding and Treatment				Reagents: Pounds per ton heads--(2)						Screen Analysis	
Operation 2519	Time Min.	Percent Solids	pH	SA	B4	Cr	Z-6	208	MIBC	Rgr. Flot. Tailing	Percent Weight
Grinding (1)	35.0	67	7.7	2.0							
Conditioner	10.0	25	8.2	1.2	0.08	0.08	0.05	0.10	0.04	+65	0.1
No.1 Rougher Flot.	8.0	25	8.2	--	--	--	--	--	--	-65+100	3.3
No.2 Rougher Flot.	7.0	25	8.2					0.10		-100+150	9.8
										-150+200	18.2
										-200	68.6
										Total	100.0

Grinding (1)  
 Classification, mesh 65  
 Time, minutes 20  
 Sands reground, minutes 15

(2) Reagent Symbols:  
 SA = Soda Ash  
 B4 = Barrett Coal Tar Creosote No. 4  
 Cr = Cresylic Acid  
 208 = American Cyanamid Reagent 208  
 MIBC = Shell Company Methyl Isobutyl Caribnol

PRODUCT	Percent Weight	oz./ton		ASSAYS		PERCENT RECOVERY	
		Au	Ag			Au	Ag
Head Sample Assay		0.25	2.16				
Calculated Head Assay	100.0	0.26	2.76			100.0	100.0
Rougher Flotation Conct	1.56	14.27	113.90			84.97	64.34
Rougher Flot. Tailing	98.44	0.04	0.10			15.03	35.66

FLOTATION TAILING SCREEN SIZE ANALYSIS

+200 Mesh	31.4	0.03	0.44			18.7	19.62
-200 Mesh	68.6	0.06	0.90			81.3	80.38



DENVER EQUIPMENT COMPANY  
ORE TESTING DIVISION  
Denver, Colorado

Report No. 05-156577  
Test No. 4

AMALGAMATION TEST DATA

SAMPLE IDENTIFICATION: Receiving No. 5644 -- L. F. Pekarik

AGITATION:

Time, minutes 60.  
Percent solids 25.

ASSAYS, ounces per ton

FEED	Assayed	Calculated
Gold	0.25	0.27
Silver	2.16	2.19

TAILING

Gold	0.14
Silver	1.72

AMALGAM recovered, calculated to ounces per ton of feed

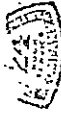
Gold	0.128
Silver	0.143

RECOVERY, percent:

Gold	47.76
Silver	52.24

NOTES:

A charge of 500-grams of head ore crushed to minus 10-mesh was ground in a porcelain roll jar with steel balls to minus 100-mesh and after removal and washing the balls, 50-grams of mercury were added and the charge agitated on slow rolls for 1-hour. The resulting amalgam was separated from the pulp by elutriation and retorted and the gold and silver in the amalgam determined by cupellation and parting. The test showed 2.2-milligrams of gold and 2.45-milligrams of silver recovered from the amalgam.



METALLURGICAL RESULTS

REPORT NO. 05-156577 TEST NO. 5

TYPE OF TEST

Gravity Table Concentration Test with Amalgamation of Table Concentrate

SAMPLE IDENTIFICATION

Receiving No. 5644 -- L. F. Pekarik

TEST PROCEDURE

This test was substituted for a corduroy blanket which was specified in your original information required for Ore Test. A charge of 2500-grams of the minus 10-mesh crushed ore was ground 35-minutes to minus 65-mesh with the aid of pail classification. The ground charge was passed over a 13A Wilfley Table producing a table concentrate, a table sand tailing and a table slime tailing.

PRODUCT	Percent Weight	oz./ton		ASSAYS			PERCENT RECOVERY	
		Au	Ag	Screen Analysis of composite sand and slime table tailing	Mesh % Wgt. Cum.	% Wgt.	Au	Ag
Head Sample Assay		0.25	2.16					
Calculated Head Assay	100.0	0.23	3.11				100.0	100.0
Conct. Amalgam	---	4.07	3.42				45.60	2.81
Conct. Amalgam Residue	2.56	3.66	28.34	+65	0.14	0.14	40.98	23.31
Table Sand Tailing	69.78	0.04	2.70	-65+100	2.43	2.57	12.21	60.55
Table Slime Tailing	27.66	0.01	1.50	-100+150	10.74	13.31	1.21	13.33
				-150+200	17.18	30.49		
				-200	69.51	---		
				TOTAL	100.00			

REMARKS:

The table concentrate, produced as described above, was subjected to barrel amalgamation. The amalgam was retorted, cupelled and gold and silver produced by inquartation and parting.